THE BUILDER

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THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

WITH WHICH IS INCORPORATED THE "BRITISH ARCHITECT."

VOL. CXVII.—No. 3990 SEPTEMBER 26, 1919.

HEATING.

QUESTIONS in connection with the subject of heat—the chief topic of the present issue—are exercising us all at the present time. The advent of autumn naturally makes us think of our prospects during the coming winter, and wonder vaguely whether the unconstitutional attitude of a section of workers—men, by the way, who were among our most valuable assets during the war—will not only put an absolutely fatal drag on industry, but bring us home after the day's work to cold hearths. We hope, we had almost said we believe, that these fears will prove ill-founded, and that the Premier's call to the new war will find a general response which will bring us through our difficulties. However this may be, good often comes out of evil, and the shortage of heat energy should at least draw our attention to the necessity not only for personal economy, but for economy in method, beginning when the miner first uses his pick, and finding its way through every stage until we reach the kitchen range and the gas stove.

Coal, which is mineralised wood from the ancient subtropical forests of the Carboniferous Period, varies considerably in composition, but for a given variety each pound yields on combustion a definite number of heat units. No ordinary commercial use of coal can secure to us the whole of these units, and many methods of burning utilise as useful heat only a very small percentage of the total heat energy emitted. This is true not only of such recognised offenders as the ordinary open fire, but also of coal used for industrial purposes, such as raising steam. When bituminous coal is heated it is decomposed into a multitude of complex bodies, mixtures of a great variety of chemical compounds mostly composed of carbon and hydrogen, some gaseous, some liquid or semi-solid, but what is not so generally realised is that the composition of these products of distillation varies very considerably with the temperature at which such distillation is performed. We all know, for example, that coal gas varies considerably in quality, and this is partly due to temperature variations in its production. Professor Armstrong has recently made some very unfavourable comparisons between the distillation temperatures adopted in this country as contrasted with America, and if these criticisms are well founded it means that we are getting fewer units of heat per cubic foot of gas than we might. At a time when we are paying heavily for gas, this is a matter which ought to be carefully gone into.

The use of gaseous and liquid fuel appears to indicate that the direct combustion of coal as a source of heat energy is nearly always wasteful. We know that liquid fuel is being increasingly used for raising steam, and has been successfully employed in our Navy and on our railways, and there seems little doubt that the proper use of all coal lies in its indirect combustion, not only because more heat units can be obtained by this means, but because a variety of useful substances, the chief of which is ammonia, can be thus first extracted. We venture to predict that the future will bring into our homes some suitable means of burning oil fuel for warming and cooking purposes, with very considerable saving both in cost and heat units. It may be that we shall see national pipe lines feeding our houses with an oil supply, or possibly we shall rest content with suitable tanks connected to a home service. No fuel is so concentrated and cleanly to use, and posterity will look back in wonder at the days of the coalman with his sack and dust, and will know no more the aftermath of the domestic grate in the morning. But this is not yet, for the proper burning of oil requires arrangements which mechanical science has not yet applied to our firesides and kitchens.

It may be asked if anything is being done in the direction of experiments to bring about the many improvements in the use of coal which are obviously necessary—improvements which would not only effect a saving in a fast decreasing supply of material upon which our national prosperity depends, but enable a large section of the mining population to turn its activities to other industrial fields in which it is to be hoped less cause for unrest would be found. We are glad to be able to answer any such questions in the affirmative. The Department of Scientific and Industrial Research has taken up this matter, and in pursuance of a general policy outlined in 1916, a Fuel Research Board has been formed and special buildings, with suitable railway approaches, have been erected for experimental work at Greenwich. Here all investigations in the national interest will be conducted; the Navy and the Ministry of Munitions have already benefited by advice from this Board, which has in hand problems connected with national oil supply, coal dust combustion and like matters intimately connected with industrial welfare, and it may be assumed that the humbler, but none the less important, problems of our ten million homes will receive adequate attention. Though the miners have dropped their production by 30 per cent., the heat units lost at present on combustion are on an average vastly greater than this, and there is no reason to doubt that an all round increase of 30 per cent. efficiency may be the eventual outcome of this national work. While these researches may alleviate the situation in a few years, it is none the less desirable that individual efforts be made to use existing means of combustion more effectively. Something has been done, but much remains to be accomplished in improvements to the domestic grate and the kitchen range, and though gas heating has many advocates and possesses obvious advantages, the existing means of burning it cannot, on the whole, be said to be economical.

Although scientists have recently called attention to the utilisation of the internal heat of the earth, the suggestion being to obtain heat energy by the sinking of a shaft five miles deep, this must necessarily remain a matter for a somewhat distant future, and our only artificial supply at present is coal and its products. We want first economical mining, both as regards material and method, next, well-organised schemes for transport and handling. When the coal or its products reach the consumer we need economy in burning, to which such simple expedients as adequate lagging, stoking and banking, and the use of economisers and waste steam can largely contribute. From the private consumer we ask for care in consumption, and that freeholders and long leaseholders should favourably consider and work out the capital cost and current saving to be effected by the introduction of central heating, modern grates, closed stoves and like appliances. We hope that the articles in this issue may assist in the solution of these problems.

NOTES.

The Late A. R. Jemmett.

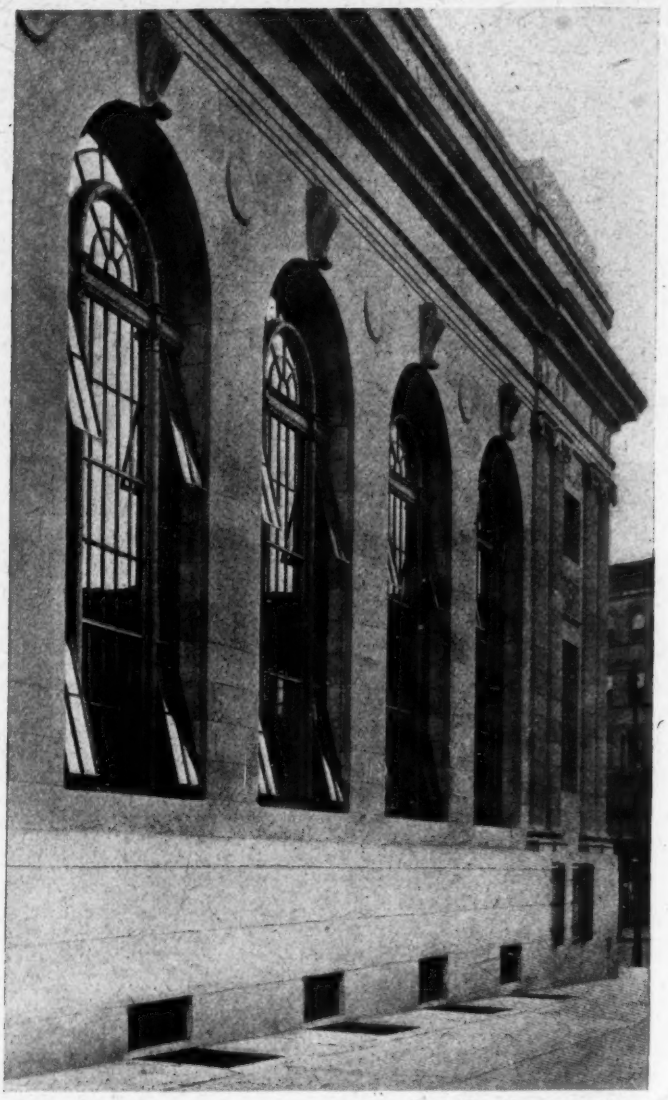
THE architectural profession has suffered a real loss in the death of Mr. Arthur Rutherford Jemmett. We should think few architects viewed their art from such a dignified standpoint, and he appeared to have a philosophic basis for his study of it. He was a good friend to others and did more for the benefit of them than himself, for he never really arrived at the position and advantage he deserved. We sincerely regret his loss.

The Building Industries' Consultative Board.

WE are glad to know that the Building Industries' Consultative Board, which was the outcome of the conference summoned by the Royal Institute of British Architects early in the summer, is meeting regularly at Conduit-street, and that it is justifying its existence so satisfactorily. It appears to have made many useful inquiries affecting the industry and the stagnation in the trade—the recent stagnation, we hope we may say—and some of its conclusions we give on p. 315. The partial responsibility of the Government for this stagnation is indicated by the admission that the increased cost of materials, at all events, was due, as was definitely alleged months ago, to the action of the Building Materials Supply Department of the Ministry of Munitions in purchasing bricks and other materials for its housing schemes, although the point is also made, and with reason, we believe, that many of the brickyards could not have been re-started unless they had been helped with money and vast orders. The many interests affected by the Government building activities will be in hearty agreement with the Building Industries' Consultative Board, that the time has come for the Government to suspend its operations and leave the law of supply and demand to settle the price of materials. A resolution to this effect has been sent to the Government, with a further recommendation that the building trade should be left free from any form of Government control or interference. If the Government will act on the advice of the Board, it is hoped that "in a comparatively short time prices will come back to a reasonable level"—a statement from which one must not expect too much, however!

Control in the Building Industry.

THE Board has also, of course, been considering the reasons for the increased cost of labour, and the question of output naturally received a great deal of attention. The restriction which is alleged by the masters is denied by the operatives, at least to the extent that is suggested, but it is admitted that output might be greatly improved by the introduction of a new spirit and a new tradition into the building trade. The operatives say that they will never be permanently satisfied until a real change is made in the methods of the trade. They are not content, as in the past, to be simply "hands." They want a real share in the control and guidance of the industry in which they have invested their lives and their skill. Readers of the *Builder* are familiar with these claims and the contention of the masters that those who have the financial responsibility must have unfettered control of the business, and although the immediate outlook cannot be regarded as very hopeful, we believe that the commonsense and common interests of leaders on both sides will result in a solution without the interposition of industrial war, which must do infinite harm to the country and cannot possibly settle the question. In the meantime, the Consultative Board is at work on the organisation of a crusade for the introduction of a new spirit into the trade. It hopes to awaken in the minds of everyone engaged in the industry that "team spirit" that carried the nation through the war to a triumphant issue, and we wish them every success in their endeavours.



From the *American Architect*.

The Dollar Savings Bank, Willis Avenue, New York.
MESSRS. RENWICK, ASPINWALL & TUCKER, Architects.

Skilled Trades.

THE London County Council Trade Scholarships for boys and girls in 1920 are announced, and application forms must be received by the 6th of October. The next school year begins on April, 1920, and 263 scholarships for boys and 324 for girls (with maintenance grants) are offered. This valuable aid to the promotion of skilled work may, we hope, be extended and be taken advantage of to the full. There should be instilled into the minds of all a firm belief in the value of a skilled trade, and it should be our aim to use every possible means to extend the benefit of skilled trade education. It should be a life-long boon to hundreds of boys every year that they have been enabled to attend the L.C.C. Trade Schools for building trades, furniture, woodcarving, silversmith and jewellery work, book-production, engraving, engineering trades, &c.

Economy in Architecture. THE excessive price of materials, increased wages and reduced output have so increased the cost of building that architects, in many cases, will be stimulated to try and obtain successful effects by simple means; say, for instance, bold treatments in ordinary brickwork, or reinforced concrete, instead of resorting to stone or delicate cut and rubbed brickwork, very delightful in many cases but extravagant both of material and labour. Ewan Christian once remarked that cut bricks set in fine putty looked very pretty, but he did not like the effect; it was lacking in vigour. After the strenuous times we have passed through, and possibly with a still more strenuous period ahead, designs depending for their effect on vigour and boldness seem more appropriate than those relying on delicacy of detail, as well as being more suitable in our straitened circumstances. There seems to be an opening for a type of design that in this way would be characteristic of the age, and mark the period of the great war.

Church Roofs. A CORRESPONDENT writes: "Many churches of a plain type are successful in everything but the roof. The plain open timber roof is often decidedly 'barny,' and funds do not allow of an elaborate one. Wooden groining, although it has been used by leading men, cannot be logically defended. Simple wooden barrel roofs are more appropriate, but the soul sighs for a little variety. There seems to be an opening for some freshness of treatment in the roof of ordinary simple parish churches."

The "Termination of the War." As there is every reason to wish to expedite a return to normal conditions and to relax unnecessary restrictions, it may be asked, "When will the 'termination of the war' be officially declared?" Many of the Emergency Statutes are in force for the duration of the war and six months after its termination, for instance, this was the case in the Increase of Rent Act, until in the amending Act a definite date was fixed; and many other Statutes contain a like provision. Contracts are also affected by the declaration of the termination of the war, for Section 1 of the Termination of the Present War Act provides that the date which is declared under this Act shall, unless the context requires otherwise, be the termination of the war in any contract, deed, or other instrument referring expressly or impliedly and in whatever form of words to the present war or present hostilities, and this embraces a number of commercial documents. By Section 1 of the Termination of the Present War Act, it is provided that the war shall be treated as having continued to and ended on a date to be declared by Order in Council for the purposes of any Act of Parliament, Order in Council and Proclamation, and, as stated above, in contracts. Section 2, however, provides that the date so declared shall be as nearly as may be the date of the exchange or deposit of ratifications of the treaty or treaties of peace, but a proviso is added that, notwithstanding anything in this provision, the date declared as aforesaid shall be conclusive for all purposes of this Act.

An Important Question. THE question which is of great importance to the commercial world is, "Will the Government 'name the day' directly the principal Powers have ratified the treaties, acting under the above proviso, or will it wait until the last little Power has come into line?" In the latter event, having regard to the disturbed condition of the world, it appears that the war may remain with us for ever. In contracts, the date when named will take immediate effect, but in many Statutes a further period of six months will still have to elapse.

Housing Criticism. SOME pertinent criticism appears in the *Economist* (September 20) on the position of housing, which certainly is a problem of a very grave kind. It is clear enough that the incidence of loss on housing methods will fall very unequally and unfairly. The writer says, "with a Gilbertian touch an owner may only charge a pre-war rental value but there is no control over capital value, and incidentally a house costs twice as much to build to-day, and housing is in great demand. Thus, the owner has the choice of selling his property at from 50 to 75 per cent. increase on pre-war value or letting at pre-war rents with an increase of 10 per cent. in rent in the near future." It is pointed out that converted Government huts are being provided at about 17s. a week, which leaves one wondering what the rent of the real house will be when the promised day of delivery matures. It does really seem that the immense loss which is to be faced in regard to housing may fall on many who are least prepared to bear it. By the way, it is pointed out in the *Economist* that timber, even more than oil, will be the chief article of export from Poland to this country, and this, with other things, points to a very considerable financial assistance by way of a loan to that country from Great Britain.

Un-economic Housing. OUR authorities are beginning to realise the serious difficulties in the way of housing schemes, and therefore we are not surprised to hear that, at a meeting on the 22nd inst., the Nottingham City Council rescinded extensive schemes previously decided upon for the provision of new houses. The *Times* says "it was contended that the cost involved would be altogether disproportionate to the rents received from the tenants, whilst there was nothing under the Government arrangements which would safeguard the municipality against ultimate heavy loss."

Belgian Gratitude to a British Architect. THE Council of the Central Society of Architecture of Belgium has just conferred the rank of Honorary Member on Mr. Ernest Newton, R.A., who was President of the Royal Institute of British Architects during the first three years of the war. The offer of this distinction was accompanied by an expression of the warmest gratitude for the unwearied help and sympathy which he extended to exiled Belgian architects during the cruel years of the German occupation. Mr. Newton's many friends will be glad to know that this distinction has been conferred on him.

Garden Pavilion, Nether Swell Manor, Glos.
MR. E. GUY DAWBER, F.R.I.B.A., Architect.

GENERAL NEWS.

Professional Announcement.

Mr. Evelyn Helligar, A.R.I.B.A., has removed from 7, Quality-court, W.C. 2, to 17, John-street, Bedford-row, W.C.

Personal.

We understand that Mr. William Dunn is about to retire from practice, and he is leaving in a few days for a stay in the South of France. A number of his friends are anxious to entertain him at a farewell dinner, and Mr. Dunn has accepted the invitation. The dinner will take place at Pagani's Restaurant, Great Portland-street, on Friday, September 26, at 7.30 for 7.45 p.m. (morning dress).

The R.I.B.A. Library.

Members and students of the Royal Institute of British Architects are notified that, from October 1 until June 1, the Library will be open from 10 a.m. till 8 p.m.; and on Saturdays, from 10 a.m. till 5 p.m.

National Health Insurance.

Now that the scope of the National Health Insurance Act has been extended to include all employees whose remuneration does not exceed £250 per annum, unless they hold certificates of exemption, the Architects' and Surveyors' Approved Society draws attention to the fact that it was formed for the benefit of members of the architectural and surveying professions. Those coming within the scope of the new provisions are recommended to communicate with the Secretary, 35, Bedford-square, W.C. 1.

The Whitgift Hospital.

The Croydon Town Council has decided to apply for Parliamentary sanction to a street-widening scheme, which will involve the demolition of the Whitgift Hospital. The future of this ancient building has long been the subject of controversy, owing to the growth of traffic rendering the street, which is very narrow at the spot, dangerous. In 1913 the Local Government Board laid it down that if the Council desired to widen the street it should begin on the opposite side, but such a scheme would be far more expensive than the removal of the hospital.

Insurance Offices.—MR. E. GUY DAWBER, F.R.I.B.A., Architect.

CORRESPONDENCE.

Standard Specification.

SIR,—I turned with interest to the "Standard Specification for Cottages," given in your issue of the 12th inst., interest which became tinged with disappointment as its various clauses were perused. The introductory paragraph, presumably based upon some official pronouncement, refers to the present scarcity of timber and urges economy in its use, but the sections in which this material is specified appear to have been written with a variable regard to this injunction. Some of the clauses also might have been expressed in a clearer manner. "Specificationese" is, or was, a well-known variety of our language, but one looks for clear and concise wording in a "Standard" document. When the question of national housing was first under consideration, we were told that the building by-laws were responsible for the excessive cost of house building, and that these were to be set aside where their provisions were in excess. The requirements of this specification, however, are in excess of those contained in the by-laws of this city and, I imagine, of those of most large towns in the country. The division of the trades is very confusing to those accustomed to North Country practice; it passes all comprehension why materials which are always provided and fixed by the plumber are specified under several other trades. The drainage requirements are excessive where good foundations or subsoil are found; "tested" pipes should not require concrete in the manner specified if carefully laid on a solid bed and with properly-made joints. On the other hand, 4½ in. brickwork is not sufficient for manholes 3 ft. in depth. The provision of the channel 2 ft. in length for the sink waste to discharge into before reaching the trap has long been discarded in this part of the country. We prefer to leave no surfaces upon which filth may dry and then be blown about. There is on the market a combined stoneware gulley-top and curb, which is much superior to either a stone or concrete curb fitted to the ordinary gulley top. Section 74, under the heading of "Slater," requires 2 by 1 battens for ordinary Welsh slates, a size much too large fo any class of building. Each slate, moreover, is to have two 2 in. stout nails. Nails of this length would project ½ in. to ¾ in. on the underside of the battens, a pure waste of material. One is familiar with the double course laid at the eaves of a roof, but I fear the North Country slater will be puzzled how to fix the "extra course of slates" under the verges.

Turning to the section headed "Carpenter and Joiner", while there is much calling for comment, I will confine myself to a very few items. The sizes specified for floor joists and roof rafters are in excess of what is necessary in good-class work, viewed either from a practical or theoretical standpoint. The scantlings given may be varied, so it is said, provided that others of equal area are used. Possibly the writer intended others of equal strength, a very different thing. It is a very elementary fact that the bearing capacity of a timber beam, leaving the question of length out of account, depends upon its bed^2, and it is this, and not its area, which should be similar if one size is substituted for another. "The roofs are to be stiffened with the necessary collars and struts to carry 5 in. by 3 in. purlins at intervals of about 6 ft." Presumably, it is intended that the collars and struts shall be at "intervals of about 6 ft." but it might be taken that this dimension refers to the distance apart of the purlins. In either case, 5 in. by 3 in. purlins are weaker in proportion than the rafters they are supposed to support. Further, if the rafters vary in size by reason of the length of their bearing, surely the purlins should do so also, according to their length or distance apart. One further item in this trade may be mentioned: it is a small matter, but is typical of the rigid regard (?) for economy which characterises this document. Each outer door is specified to be "hung with three 4 in. butt hinges." Two would be quite sufficient for doors of the thickness specified, and the size might be reduced to 3½ in. By the way, in ordinary specifications it is usual to mention the sizes of the doors as well as their thicknesses.

The matters to which I have drawn attention may appear small, and at a hasty glance, somewhat trivial. It must be remembered, however, that it is not one cottage but 300,000, perhaps many more, the erection of which will be governed by this "Standard Specification." The cost of completing such a large number of houses will lay a very heavy burden upon the rate- and tax-payers of this country; in justice to them it is most desirable that no unnecessary expenditure should be incurred in connection with this work. Let us have efficiency by all means, but excess, even in small things, whether it be in the sizes of timbers or number of butt hinges, is waste, and as such must be carefully avoided.

JAMES R. WIGFULL, A.R.I.B.A.

Sheffield.

Homes for the People: Bricks *v.* Concrete.

SIR,—I have read Mr. Sanders' comments on my reply to his letter published in the *Builder* of the 29th ult., and concur with much he writes; there is work where 500 bricks laid in nine hours would be a fair day's work. The work which I have seen, where the output has averaged 320 bricks in ten hours, including one hour overtime, has been inferior to that which I have seen done at the rate of 1,000 bric s laid in 8½ hours. The work during the past few years has been State building on a go-as-you-please, "we are all working for the Government" style, which is, doubtless, very different to work carried out by private enterprise. Mr. Sanders wrongly asserts that I make unfounded charges against the clerk of works. I make no accusations against the clerk of works, neither do I state that without trade unionism all is lost. When we see official advertisements in the technical journals for architects' assistants and professional men with a list of necessary qualifications occupying several inches of space, and offering a salary less than that paid to many navvy gangers, one must conclude that by combination there is better remuneration for services rendered. In regard to officials being in many instances as much to blame as the practical workmen for slow and costly work, this is quite correct. I contend that good organisation and management and up-to-date machinery and labour-saving appliances must be used in conjunction with the men who are willing to give of their best without stint for a fair day's pay.

"ANGLO-AUSTRALIAN RESIDENT ENGINEER."

Surveying Instruments.

SIR,—I have received a communication from the Controller to the Surplus Property Disposal Board to the effect that a number of surveying instruments and apparatus, including theodolites, levels, &c., are now being notified for disposal. Lists giving particulars are being prepared, and will be brought up to date as required, but in the meantime information may be obtained and some of the instruments may be seen at Room 110, Caxton House, Tothill-street, S.W. This would seem to afford an opportunity of acquiring instruments at very reasonable rates, and I therefore venture to take advantage of your widely-read columns to make it known to your readers.

A. GODDARD,
Surveyors' Institution. *Secretary.*

Inquiry.

A correspondent would like to receive particulars of any experiences which our readers may have had of the communication of dry rot into buildings by the use of old rubble imported from old buildings.

BOOKS.

The Design of Factory and Industrial Buildings. By E. G. W. SOUSTER. London: Scott, Greenwood & Son. Price 10s. 6d. net.

THIS little volume of some 150 pages will be found of value to those who lack experience in factory design. It is not written to set out the engineers calculations for construction, but to give a general account of the working of factories and their requirements in the matter of planning; and though some of the points enumerated will appear fairly obvious to those possessed of general architectural knowledge, a great many useful hints are given both as regards lay-out and details in the matter of provision for fittings. Choice of a site, types of buildings, construction, lighting, ventilation and heating, sanitation and other matters form the subject of different chapters. Nearly fifty pages of the book are given to a final chapter on representative factory buildings, which is fully illustrated by actual designs. A short chapter is devoted to buildings for industrial research, in which are some useful plans, but few details. It is not necessary to have a chemical laboratory at the top of a building, though this is usually its position; neither are isolated piers carried down clear of the building nearly so often required as is generally supposed. Although provision for research should be adequate, we want it to be clear that it may be very often simple, and thus encourage investigation by small firms.

THE GATTIE TRANSPORT SYSTEM.

When the Board of Trade inquiry into Mr. W. H. Gattie's proposal for the establishment of central clearing stations for goods was continued last week, Mr. E. G. Will emphasised the need for improved and quicker methods for the transport of food. Mr. Herbert Birch quoted figures to prove that London as a port was declining, and said that a ship which took 40 hours to unload with present methods could be unloaded in 15 hours under the Gattie system. Mr. W. S. Webber, a stationmaster, thought that the system was the best he had heard of for handling goods. It would effect a great saving in time, engine power, and claims for damage, and he believed the workers would earn more by it. After other witnesss had spoken in favour of the system, Mr. E. W. Kearney explained his design of double-tube railways for passing trains in and out of the central station. He was satisfied that under Mr. Gattie's scheme trains could be unloaded and reloaded in five minutes. He estimated the cost of constructing a single tube at £300,000 per mile. Mr. R. Horniman stated that more than 3,000 acres of land in London were occupied by goods yards, and the value of such yards throughout the country was over 300 million pounds. An economy of 680,000 wagons would be effected by the abolition of shunting, and over 70 per cent of the locomotive work in London could be eliminated. He estimated that the saving to the railway companies would be over 52 million pounds per annum. Under the Gattie system, he had no doubt that private cartage would in time disappear. He estimated that between 300 and 400 million pounds would have to be expended before the benefit of the system would be realised. He agreed that there would be a great displacement of labour by the clearing-house scheme, but many would be absorbed in the building of the stations, and the system would give such an impetus to trade that there would be a great boom in labour. Mr. H. W. Flatau said that the Surrey Commercial Docks, where the bulk of London timber was handled, was hopelessly behind any other port in Europe. In his opinion, the installation of the Gattie system would dispose of much of the delay and congestion at the docks. Other witnesses gave evidence at to the delay experienced in collecting and delivering goods at railway stations and docks, and to the value of the Gattie system. The inquiry was adjourned.

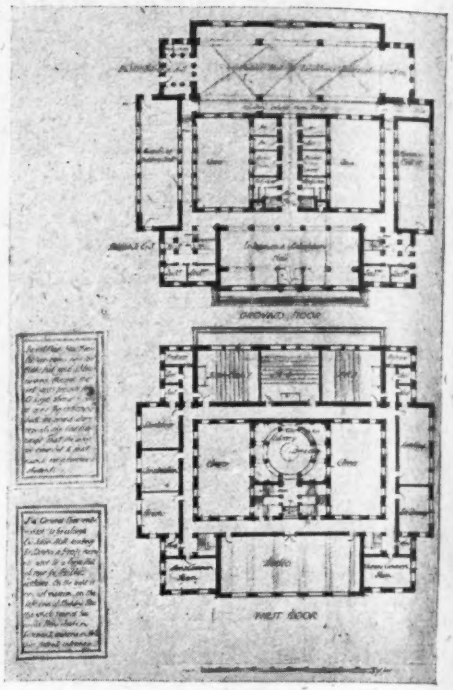
LIVERPOOL UNIVERSITY SCHOOL OF ARCHITECTURE.

EXHIBITION OF STUDENTS' WORK.

FOR some years before the war it was apparent that the old system of office pupilage, as a substitute for architectural education, was slowly but inevitably dying in England. The war has given it the *coup de grâce*. The present state of the Liverpool School is an eloquent witness of the fact. Its average pre-war strength was thirty full-time day students. It now has eighty, and by the beginning of the autumn term an increase of another twenty or more is practically assured. For the greater part of this accession of numbers, the Government scheme of maintenance and education grants to ex-service men is immediately responsible. But the significance of the effect of that policy cannot be mistaken. The students whom the opportunity has brought to the School represent a wide variety of types—from those who have had extensive professional experience to those who have had none at all. Some entered the Army or Navy straight from school; some had proceeded to a school of architecture and had volunteered for service before completing their courses of study; some had wholly or in part served their articles in an office; some were assistant or head draughtsmen before the war; and some were established in practice. They were all, however, animated by a common purpose. Given the chance, they intended, when the war was over, to pursue their architectural education at a school of architecture.

At last the simple truth has been generally realised that the experience in an office can never be more than the professional complement to the training given by a school. No office possesses a staff, a scientific equipment and a library specially created for and devoted to the purpose of teaching architecture. It is not the function of an office to undertake such work; it could not, if it would—and, in point of fact, it never attempts to.

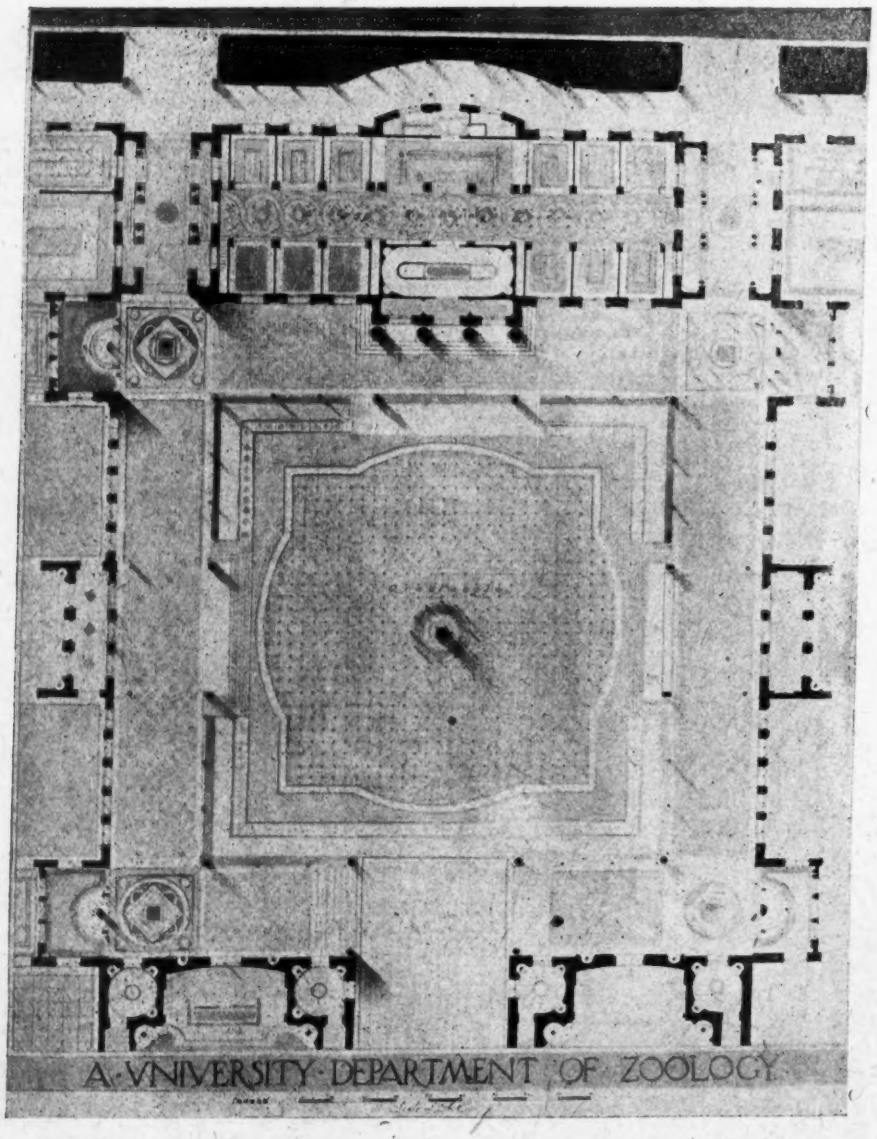
So much by way of introduction to an exhibition that very clearly proclaims the new area. The drawings which form the material of the exhibition were prepared under conditions governing the certificate, the diploma, the degree, and certain special courses; and it is encouraging to note that by far the greater proportion of students have committed themselves to regular courses extending over two to five years.



First-class Certificate Design, by Mr. B. BUTLER.

The general level of the work is unquestionably high, and sometimes achieves brilliance—notably so in the case of two or three of the colonial students. There is evident a tendency to concentrate on large-scale details and on the careful preservation of plans. The admirable rendering of some of the site-plans submitted for the Lever Prize competition—a Peace Memorial to be erected on a given site opposite the main entrance to one of the Liverpool parks—shows what can be done by systematic instruction in the use of colour-washes.

After a survey of the exhibition, one could imagine an easier task than that of deciding the awards of travelling scholarships, studentships and prizes. The adjudicators—whose decisions have already been published—must themselves have felt that, in some cases, it was invidious to make distinctions between so much that was of merit. We illustrate this week several drawings from the Exhibition.



Final Examination Project for Diploma, by Mr. CLIFFORD HOLLIDAY.

Dundee.

At a recent meeting of the Designs Committee of the War Memorial Committee, a letter was received from the Royal Scottish Academy. It was stated that, as a rule, competition for designs was to be avoided, as the best sculptors were unwilling to engage in such except when the subject was of first importance, and when competition for designs took place it should be conducted in conformity with the conditions formulated by the Royal Institute of British Architects and the Royal Society of British Sculptors. It was agreed that application should be made for copies of the rules of competition prior to a final decision being reached. It is expected that the memorial will cost about £60,000.

EXHIBITIONS OF THE WEEK.

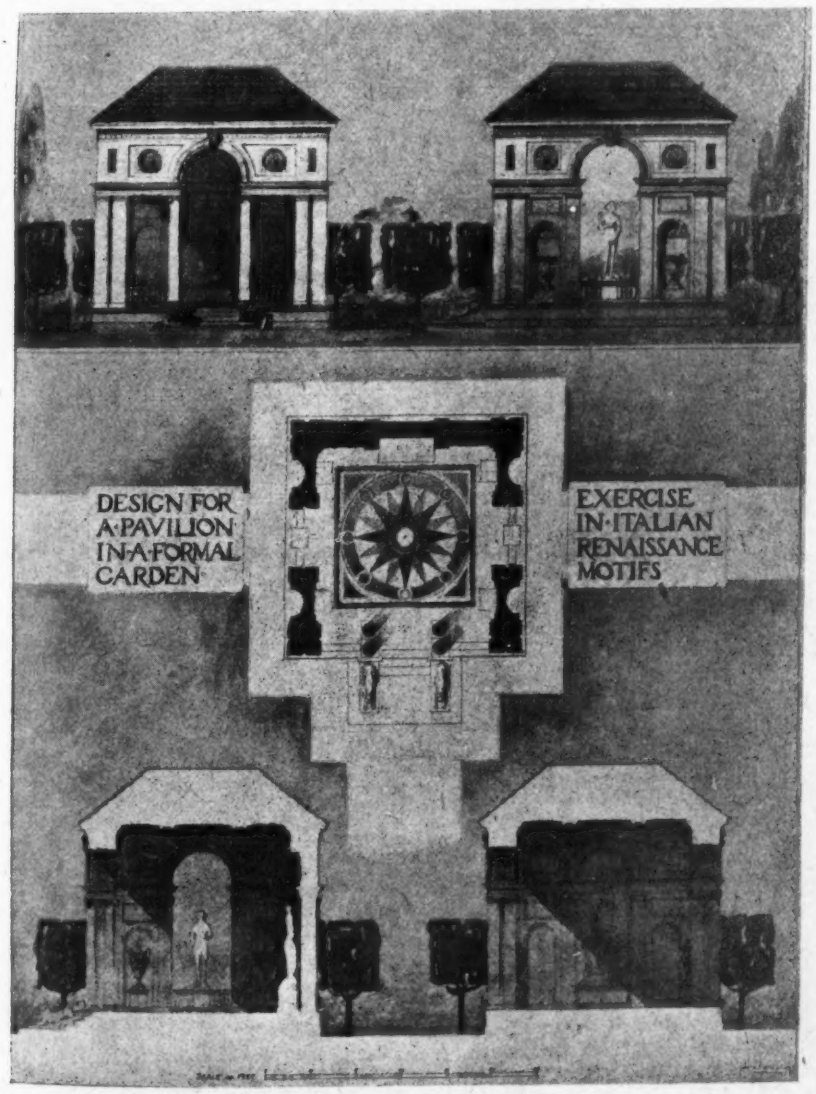
Leicester Galleries Exhibition. Hargrave's Posters at the Burlington Galleries.

THE tendency in the early autumn exhibitions is to make them of a general character; we have noticed this recently in the Twenty-one Gallery, and the same is the case in the exhibition recently opened at the Leicester Galleries. This arrangement has the advantage that it permits freedom of choice and absolute diversity of artist and subject; and these advantages have been effectively taken hold of in the Leicester Galleries. Here, in the Entrance Gallery we have the refined drawings—lovely in type and exquisite in their sentiment—by Sir Edward Burne-Jones, studies of heads by Simeon Solomon, a fine idealist whose work shows strong sympathy with the English Preraphaelites, Philip Connard, Charles Conder, the late Edward Stott in his admirable rendering of English rustic life, and J. D. Harding's drawings of buildings and landscape.

In the room within A. E. John is presented in his "Rustic Idyll,"—in which the love scene has the brutal directness which Emile Zola gave to the *amours* of his French peasants,—Lamorna Birch, Spenser Pryse ("The Dressing Room"), the Venetian Emma Ciardi in two of her wonted subjects ("On the Terrace" and "The Garden") and Charles Sims in two very charming and typical creations, where a little Love is aiming his bow at a half-frightened, half-expectant maiden, just emergent from the "flapper" stage ("Gentle Love, Loose not thy Dart"); and "The Fountain," beneath which a young girl is standing, the whole scene delightfully fresh, vaporous, and cool in colour.

The next room contains one of the best paintings by Wilson Steer we have ever seen, the subject being the "Hills of Worcestershire." Looking down from the heights of the Malvern range over the wide plain, shimmering in summer heat, or changed every few moments by the cloud shadows, just such a vision as this often meets the eye, with even such marvellous atmospheric effects; true to nature, the technique here is brilliantly free and masterly. Another painting to be picked out in this room is Signac's "Harbour"—actually, we believe, that of La Rochelle. M. Signac here uses the Divisional method, of which in Italy Previati is the apostle, and which is not a mere *réclame* or defiance of tradition, but a serious effort to bring light by juxtaposition instead of fusion of the colours.

We recently mentioned Mr. Hargrave's poster work at the Burlington Galleries. The exhibition is now over, having been confined to one week; but the quality of the work showed originality of design and considerable invention. One of the cleverest was the small drawing of a group of figures seen in shadow against "The Council Fire," and the "Canoe Song" of a boatman shooting the rapids was a brilliant bit of drawing. The artist here used generally water-colour or pastel as his medium for conveying his impressions, which are always direct, and generally interesting.



Liverpool School of Architecture: Degree Course Design, by MR. S. CHECKLEY. (*See* p. 312).

COMPETITION NEWS.

Baildon.

The designs of Mr. Percy Turner, A.R.I.B.A., have been placed first in the competition held by the Urban District Council in connection with its housing and town-planning scheme. Mr. Sydney D. Kitson, F.R.I.B.A., of Leeds, acted as assessor.

Oxford.

FOR THE CITY COUNCIL.—Designs for the lay-out of a congested area in the centre of the town. Mr. H. V. Lanchester, F.R.I.B.A., will act as assessor. Sending-in day, October 20. Further particulars from the Town Clerk. (See our advertisement pages, August 15.)

Leamington Spa.

FOR THE WAR MEMORIAL COMMITTEE OF THE TOWN COUNCIL.—Designs for a war memorial. Premiums £100, £50 and £25. Mr. H. V. Ashley, F.R.I.B.A., of 14, Gray's Inn-square, W.C., will act as assessor. Further particulars from the Town Clerk. Sending-in day, October 15. (See our advertisement pages, July 25.)

Ideal (Labour-saving) Home.

In connection with the Ideal Home Exhibition, to be held at Olympia from February 4 to 25, 1920, the *Daily Mail* is offering prizes for designs for a "labour-saving" house. The premiums are £250, £100, and £50. Sending-in day, October 4. Further particulars may be obtained from the Secretary of the Competition 130, Fleet-street, London, E.C. 4.

Portishead.

FOR THE URBAN DISTRICT COUNCIL.—Designs for lay-out of block of houses. Premiums £50, £30 and £20. Mr. C. F. W. Dening, F.R.I.B.A., and Mr. F. H. Smith have been appointed assessors. Sending-in day, October 31. Further particulars from Mr. F. H. Smith, Surveyor, Council Offices, Portishead. (See our advertisement pages, September 19.)

Worcester.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a war memorial. Further particulars from the chairman of the Committee, Shirehall, Worcester. (See our advertisement pages, September 19.)

Limavady.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a war memorial. Premiums, £25 and £15. Sending-in day, December 1, 1919. Further particulars from the Hon. Secretaries, Town Hall, Limavady, Co. Londonderrry.

Glasgow.

Mr. Reginald Dann, M.P.T.I., was the joint author of the third premiated design in the Glasgow Housing Competition; and not "Mr. R. Dunn," as stated in our last issue.

The Town-Planning Institute.

The following arrangements have been made in connection with the Conference of the Town-Planning Institute, which opens to-day at Oxford:—September 26, Reception; address by the President, Mr. G. L. Pepler, on "Town-Planning and Housing"; address by Dr. Addison; visit to Abingdon. September 27, Mr. E. R. Abbott opens a discussion on the application of the Housing, Town-Planning, &c., Act, 1919; visit to Colleges. September 28, Visit to Blenheim; resumed discussion on the Housing, Town-Planning, &c., Act.

THE LATE MR. A. R. JEMMETT.

THE architectural profession has suffered a greater loss in the death of Mr. A. R. Jemmett than many of its members would be aware of. His achievement in actual building work was not outstanding, and while he obtained some successes in competitive designs, several of marked distinction had not the good fortune to secure awards. It was not on his works that Mr. Jemmett's claim to the gratitude of his confrères can be based, but on his untiring and altruistic zeal for the advancement of contemporary architecture and the methods for securing this advancement. Ever since his student days the theory of architectural education had received his unremitting attention, and he had always urged that our somewhat haphazard and empirical system demanded strengthening by the adoption of the more reasoned and logical one of France. That this view has now secured such support as bids fair to bring it into general adoption is due in no small measure to Mr. Jemmett's pioneer work. That this did not make itself more quickly felt was owing to his personal qualities. One of the most retiring and unassuming of men, he was disinclined to voice his opinions except to those from whom he anticipated a sympathetic hearing; at the same time, a certain puritan rigidity with regard to the artistic faith that he held occasionally repelled those who might by circuitous methods have been brought into line. Only those who were admitted into his friendship could quite realise that under the somewhat abstract forms with which he was wont to clothe his arguments, burned a bright flame of enthusiasm for the future of his art.

Mr. Jemmett took the broadest views as to the scope of architecture, and regarded the town planning movement as a branch of architecture and not, as some have considered it, an independent science merely calling in the architect to devise embellishments and decorations. His studies in this direction led to his being asked to conduct the monthly section in the *Builder* devoted to this subject, for which he was mainly responsible during the years 1910–11–12. Shortly after this, Mr. Jemmett, with two or three personal friends who shared his views, approached the Society of Architects and enlisted the sympathies of that body for an educational scheme on the lines of the Paris ateliers linked up with the Ecole des Beaux Arts. Under the advice and with the support of several prominent French architects, the first Atelier in London was opened, Mr. Davis, as an old Beaux Arts student, consenting to become the patron, and M. Chaures, who had also had a distinguished career in the Paris schools, the sous-patron. The Atelier soon became a centre of very vital artistic activity, and Mr. Jemmett devoted a large share of his time to its service, frequently suggesting the programme and acting as one of the assessors; at other times working out a project as a student, or conducting the very popular life class.

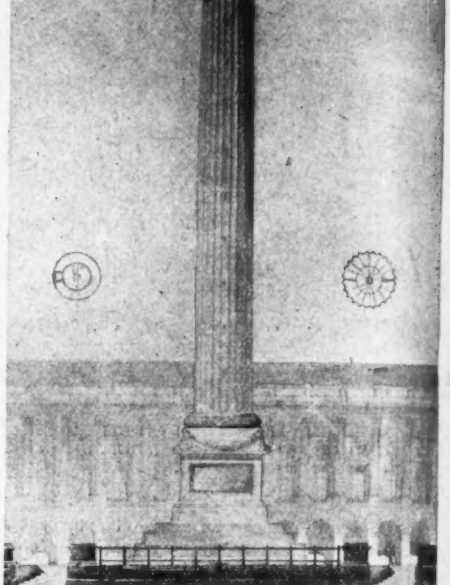
With the departure of M. Chaures and Mr. Davis on war service, Mr. Jemmett kept the Atelier in being throughout the period of the war, and though the students were few at times, there was always interesting work going on, except for a brief period, when pressing demands from the Air Ministry led to everyone available undertaking the work of tracing details of aeroplane construction.

Despite the fact that he was at that time responsible for the Atelier, when the Civic Survey of Greater London was inaugurated in 1915, Mr. Jemmett, as a member of the Professional Employment (War) Committee, was urged, by those who knew his special suitability for the position, to become honorary director of this undertaking. He accepted, well knowing that this would leave him but little time for his own practice, and acquitted himself in this service with such distinction that, had he been spared a little longer, an opportunity would have been sought to show that his devotion to the work of the Survey had not been unappreciated.

It is possible that the demands on Mr. Jemmett overtaxed his strength, for he was never one to spare either time or energy when he felt that a responsibility rested on him, and his position in the Survey involved many rather difficult questions of principle, to which he gave anxious thought before arriving at his decisions, but which would involve too long a digression were they discussed here. In brief, all those whose work he directed found in him a considerate friend, and many will feel the loss of one who was near to their thoughts and hearts. Whether an undertaking was going to profit him personally or not, was ever the last consideration in his mind, and but few could be named whose activities were so free from any idea of personal aggrandisement.

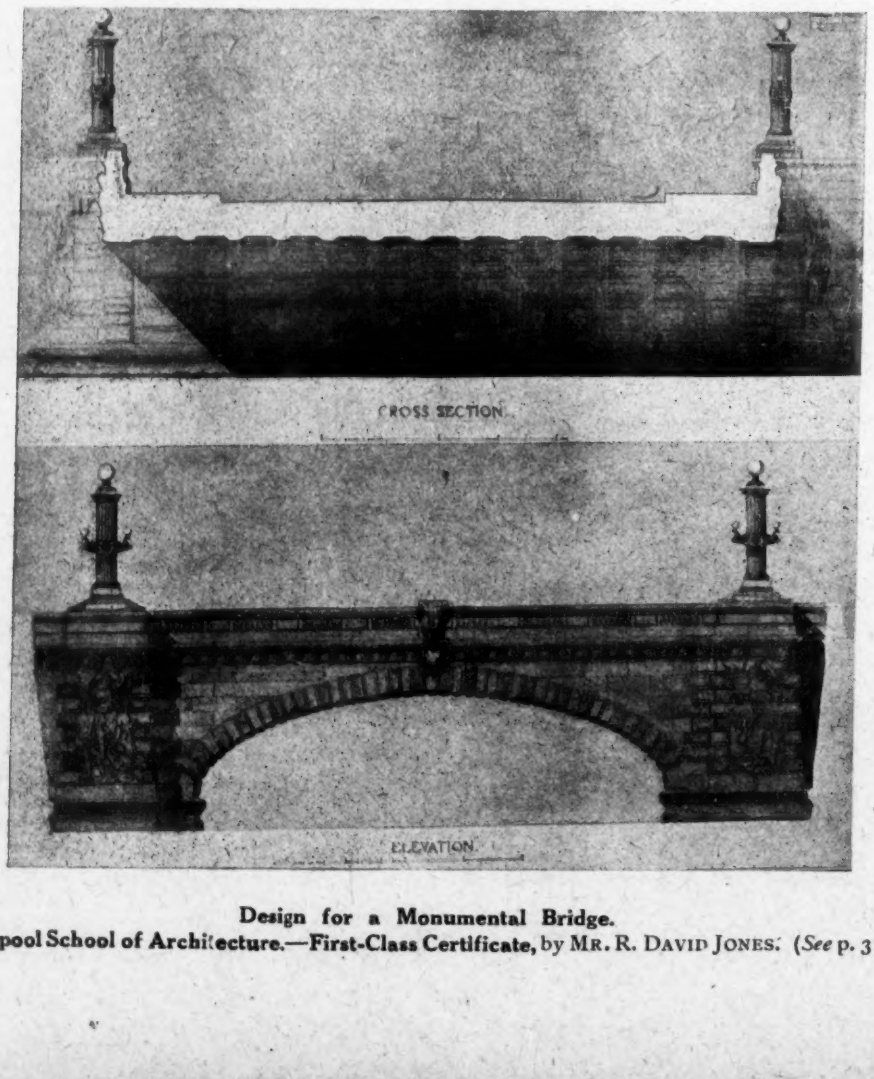
H. V. LANCHESTER.

Mr. Jemmett, who died on Sept. 17, 1919, aged 56, was articled to J. J. Stevenson in 1879, but the contract was terminated by mutual consent in 1882. He entered the R.A. Schools about 1885. He gained the R.A. Travelling Studentship (England) of £60, for Design in Architecture, in 1888, and in 1891 he was bracketed with another for the R.I.B.A. Soane Medallion. The Medallion was not awarded, but Mr. Jemmett received a grant of £25 for travel on the Continent. He worked for some time in the office of Mr. T. E. Collcutt. He attended the International Congress of Architects held in Vienna in 1908, and twice visited America, seeing some of the principal cities of Canada and the Northern States. The Municipal Buildings, Bath, and the Fire Station at Tottenham, erected in 1904–5, were designed and carried out by him in partnership with Mr. A. Taylor. His design for the L.C.C. Hall was submitted in partnership with Mr. McCombie.



Duke of Wellington Column, Liverpool.

Liverpool School of Architecture.—Degree Course Design, by MR. E. R. ARTHUR. (*See* p. 312)



Design for a Monumental Bridge.

Liverpool School of Architecture.—First-Class Certificate, by MR. R. DAVID JONES. (*See* p. 312.

MEETINGS.

September 26–29.

Town-Planning Institute.—Conference at Oxford.

WEDNESDAY, *October* 1.

The Institution of Sanitary Engineers.—Opening Sessional Meeting, at Caxton Hall, Westminster. At 7.30, for 8 p.m.

TEAM WORK IN THE BUILDING TRADE.

We have received from a correspondent the following remarks on the work of the Building Industries' Consultative Board :—

"A determined and hopeful effort is being made to get rid of the difficulties which are hampering the efficiency of the building trade. Never before has it been so vitally necessary to the welfare of the country that the trade should be vigorous, productive, economical, and smoothly running. Not only are there vast arrears of ordinary building work to be made up, but the gigantic national housing scheme demands the utmost possible output of work. Yet, at the moment, the trade is stagnant, producing little and at an excessive cost, and hampered by doubts, difficulties, friction, and the threat of internal war.

"Early in the summer, the Royal Institute of British Architects summoned a conference to consider what could be done to restore health to the trade. Dr. Addison, then President of the Local Government Board and now Minister of Health, gave his official blessing to the movement. It was warmly taken up by all the representative bodies concerned, and at the end of May, a Building Industries' Consultative Board was founded. It contains, in equal numbers, representatives of the professions and trades concerned. Five architects, five surveyors, five master builders and five operatives, with the President of the Royal Institute as Chairman, and Mr. J. P. Lloyd, of the National Federation of Building Trades' Operatives, as Vice-Chairman, constitute the Board. It has been meeting regularly at Conduit-street, and it is not too early to say that its work has already justified its existence. It faced the main problem at once. What is the reason of the stagnation in the trade ? Clearly, the answer lies in the vastly increased cost of building. Why does building cost so much more than in 1914 ? Because labour and building materials cost more. Here, the Board was faced with an inquiry along two lines. It began with materials. The master builders at once supplied ample evidence of the facts from their own recent experience. Materials had gone up to fantastic prices and the supply was slow and uncertain. Had Government action anything to do with it ? The Ministry of Munitions has a Department of Building Materials Supply which has been conducting vast operations. So the Board sent a deputation to the Ministry of Munitions to find out the facts. The Ministry met the Board in a most businesslike way and put its cards on the table. It had to face the fact that at the date of the Armistice the production of bricks and other materials had almost ceased. The yards were either closed down or in a desperate condition. To get the industries going and to bring output back to normal conditions it had helped them with money and with vast orders. The policy had succeeded, and the supply of material was now in a fairly safe position. But for the action of the Ministry it is clear that the shortage of bricks and other essentials would have made it impossible to embark on the housing scheme on a large scale. But if the supply is now fairly adequate, what justification is there for the fantastic prices which are being demanded ? The Board, with all the facts before it, came to the conclusion that the time had come for the Government to suspend its operations and leave the law of supply and demand to settle the price of materials. A resolution to this effect has been sent to the Government, with a further recommendation that the building trade should be left free from any form of Government control or interference. If the Government will act on the advice of the Board, it is hoped that in a comparatively short time prices will come back to a reasonable level.

"Next came the problem of labour—the other great factor in the high cost of building. Admittedly, the supply is short. Many men have fallen in the war, many are still in the Army, the usual flow of recruits to the trade has been largely suspended since 1914, the older men are tired, the demobilised men have not quite got back the power and habit of steady work, many of the operatives have been demoralised by the pernicious system on which so much Government work was done during the war—cost-plus-percentage, as it is called. Wages have gone up largely since 1914. Whether they have kept pace with the rise in the cost of living is a debatable point. The unions say "No," the masters say "Yes." But whatever the truth is, the rise in wages would not matter if output were satisfactory. The masters say that output has gone down deplorably since the beginning of the war. Too many men are not doing anything like a fair day's work for their wages. Whether or not it is officially sanctioned by the unions, there is, in fact, a deliberate policy of restriction of output by the men. That is the masters' case.

"To some extent it is conceded by the operatives. They claim that "real" wages have fallen since 1914, but they admit that the methods of the Government during the war have had a demoralising effect upon many of the operatives and have lowered the level of craftsmanship. They deny that individual output is restricted to the extent that is suggested, but they admit that it might be greatly improved by the introduction of a new spirit and a new tradition into the building trade. They claim that in the past the policy of the unions as regards wages and output was justified by the bad old tradition of rate-cutting among the employers, and by the well-founded fear of unemployment which arose from the casual nature of the trade. They say that the men will never be permanently satisfied until a real change is made in the methods of the trade. They are not content, as in the past, to be simply 'hands.' They want a real share in the control and guidance of the industry in which they have invested their lives and their skill. It is not a question of money, but of status and functions. Most employers meet this claim with an absolute *non possumus*. Those who have the financial responsibility must have unfettered control of the business. They cannot share it with those who have none. But there are signs that, after all, something can be done to meet the views of the men without ruining the industry. The Whitley Council of the Building Trade is thinking out a scheme on the most idealistic lines. Many minds are at work, and the commonsense and common interests of leaders on both sides will surely arrive at a solution without the interposition of industrial war which must do infinite harm to the country and cannot possibly settle the question.

"In the meantine, the Consultative Board is at work on the organisation of a crusade for the introduction of a new spirit into the trade. It hopes to awaken in the minds of everyone engaged in the industry to that 'team spirit,' which carried the nation through the war to a triumphant issue. It believes that the situation will be saved, not by higher wages and shorter hours, but by a new attitude of mind on the part of all concerned."

WAR MEMORIALS.

Gwersyllt.

It has been decided to erect a parish hall at Gwersyllt, near Wrexham, at a cost of £4,000, as a war memorial.

Bury.

It is proposed to erect a monument at Bury, as a memorial to the men of the Lancashire Fusiliers who fell in the war.

Limpsfield.

The Lord Mayor of London last week laid the foundation stone of the new wing of the Caxton Convalescent Home, which is being erected as a war memorial.

Derby.

The War Memorial Committee has recommended the Town Council to adopt a scheme for the improvement of the town, including the provision of river gardens, as a war memorial. The cost is estimated at £85,000.

Chiswick.

It has been decided that the Chiswick war memorial shall consist of an Arch of Remembrance, surmounted by a bronze statue of Victory, to be erected on Turnham Green Common, and homes for totally disabled soldiers and sailors.

London.

The Court of Common Council of the City of London has approved of a recommendation of the Streets Committee that no objection be raised to the erection of a memorial to London troops who have fallen in the war, on the site of the drinking fountain in front of the Royal Exchange. The memorial has been designed by Sir Aston Webb, President R.A., and will consist of a square panelled pillar, surmounted by a lion supporting shields bearing the City and County arms. Below will be bronze panels crowned with wreaths, bearing the names of the regiments and the principal battles in which they were engaged. Statues on pedestals of men of the London regiments, in full marching order, will flank the pillar. The memorial will be of Portland stone, with a granite base, and the figures of the memorial tablets will be in bronze. The total height will be 25 ft. The existing lamp-posts will be removed, and the advertisement-covered railings at the entrances to the Tube will be replaced with simply-designed stone balustrades.

Study in Monochrome.
Liverpool School of Architecture.—First-class Certificate Design, by MR. B. BUTLER.
(*See* p. 312).

Leading Contents.

	PAGE
HEATING	307
NOTES	308
CORRESPONDENCE	311
LIVERPOOL UNIVERSITY SCHOOL OF ARCHITECTURE	312
EXHIBITIONS OF THE WEEK	313
THE LATE A. R. JEMMETT	314
TEAMWORK IN THE BUILDING TRADE	315
LEGAL SECTION	317
HOUSING AND TOWN PLANNING NOTES	318
HEATING AND VENTILATION	320
HEATING OF COTTAGES AND FLATS	321
BUILDING TRADE WAGES	322
A GAS ECONOMY SCULLERY	323
AN INTERESTING HOSPITAL HEATING INSTALLATION	324
CONTINUOUS BEAMS IN FERRO-CONCRETE	324
STANDARD SPECIFICATION FOR ROADS AND SEWERS	325
ACQUISITION OF LAND ACT	327
THE BUILDING TRADE	328

ILLUSTRATIONS.

Uganda Cathedral.

We illustrate this week a view from the south transept of the Cathedral Church of St. Paul, Uganda, by Prof. Beresford Pite, F.R.I.B.A., which was exhibited at the Royal Academy this year. This portion has now been erected and consecrated. Illustrations of the building have already been published in the *Builder* on the following dates: October 13, 1911; September 6, 1912; October 10, 1913; May 8, 1914; November 27, 1914.

Liverpool School of Architecture.

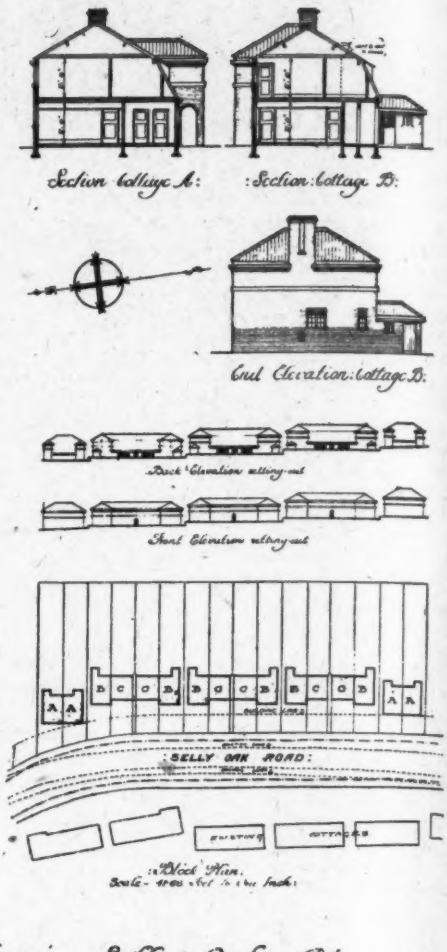
We also illustrate some of the exhibits at the Exhibition of Students' Work, Liverpool School of Architecture, an article on which appears on page 312.

Birmingham Cottage Competition.

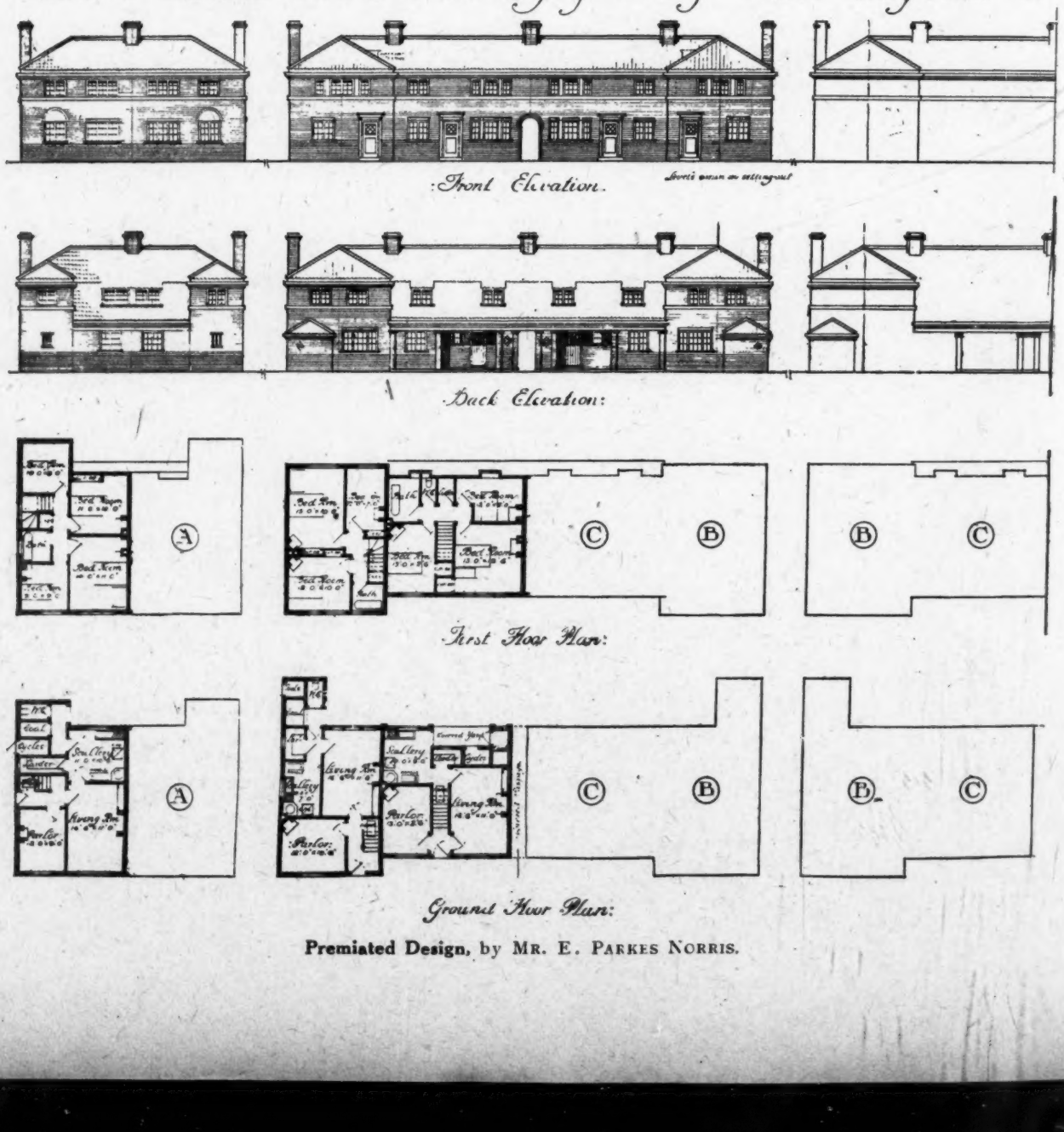
We give this week the first premiated design in the competition for houses in Oak Tree-lane, Birmingham, by Messrs. Ingall, Bridgwater & Porter; and premiated designs by Messrs. Crouch, Butler & Savage, and Mr. Harold S. Scott. The premiated design by Mr. E. Parkes Norris is illustrated on this page.

Belgian Farm-houses and Farm Buildings.

We are informed by Mr. W. E. Woolley, M.S.A., Corres. Memb., Association of Liége Architects, that, an exhibition for the improvement and restoration of agriculture has been opened at the Palais d'Egmont, Brussels, the Belgian Ministry of Agriculture being responsible for it. Agricultural work during the war is dealt with, and restoration of agriculture. It portrays by means of models and plans the various types of farms, country houses, and cottages necessary in order to improve rural life and revive agriculture. Farm buildings and farm-houses are particularly dealt with. It appears that during the war many farm-houses were erected and farms set out. The organisation has been effected by the "Commission d'embellissement de la vie rurale," which originated at Ghent, on the occasion of the modern village exhibition. Each Belgian province is participating and many Belgian architects and engineers (particularly from Liége) have been responsible for the drawings and models. At the end of the month a congress is to be held.



CITY OF BIRMINGHAM *Housing of Working Classes Selly Oak Rd.*



Premiated Design, by MR. E. PARKES NORRIS.

LEGAL SECTION

NOTES ON CURRENT CASES

Specific Performance.

The preliminary stages of a purchase of real property are often of an informal character, therefore we may note a recent decision, Auerbach *v.* Nelson (*Weekly Note*, July 12), which turned upon the point whether there was in a memorandum a sufficient description of the property to satisfy the Statute of Frauds. The defendant had verbally agreed to sell his house, Nelson Lodge, Victoria Park-road, South Hackney, to the plaintiff for the sum of £500. The plaintiff paid £10 deposit, and the defendant signed the following memorandum: "Received of Mr. Auerbach, 197, High-street, Shoreditch, £10 on account of house being sold for £500 from Mr. M. Nelson, Nelson Lodge, 143, Victoria Park-road. Possession to be taken in six weeks after date.—Morris Nelson, 21–11–1918."

The defendant, finding it difficult to procure another residence, failed to complete, and the plaintiff brought the action for specific performance. The defendant contended that neither the purchaser nor the property was sufficiently described to admit of parole evidence being given as to the identity of either. The Court held that, in the absence of evidence to the contrary, it was evident that the man who paid the £10 on account of "house being sold" with possession in six weeks, was the purchaser, and that the description of the property as a house being sold by Nelson to Auerbach was sufficient to admit of the actual house being identified by parole evidence.

Leasehold Premises Let to Limited Companies.

In a recent case, *re* Levi & Co., Ltd. (1919, 1 Ch., 416), an interesting point to owners of house property was decided, which appears never to have come before the Courts before. The point shortly stated was whether the liquidators of a limited company which has gone into voluntary liquidation, and who have elected to continue in possession of the premises, are liable under the lease for the full sum due in respect of dilapidations, or whether the landlords can only prove in the liquidation for dividends. This was a summons taken out to obtain the opinion of the Court upon this point by the liquidators of the company.

In 1896 the premises had been let by the reversioners on a lease for 21 years, at a yearly rent of £600, and subject to repairing covenants, including a covenant to deliver up the premises in good and substantial repair at the end of the term. The remainder of this lease had been assigned in 1901 to the company, and the rent was raised, as the premises were converted from warehouses into offices.

In 1910 the company went into voluntary liquidation, but the liquidators elected to remain in possession under the lease, and continued in possession, when it came to an end in 1917. Shortly before the lease determined, the surveyors of the reversioners surveyed the premises, and served a notice on the liquidators, requiring certain repairs to be done in compliance with the terms of the lease, amounting to between £500 and £600, but nothing had been done before the lease expired. It was not questioned that the liquidators were liable to pay the rent; but the question was whether the liquidators were liable in the full amount of the sum for dilapidations, or whether the reversioners could only claim dividends in the liquidation. The Court held on the principle laid down in certain cases of compulsory liquidation, as regards rates and outgoings under leases, that the same principle applied in this case of voluntary liquidation, and that the liquidators having elected to retain the premises and to enjoy the benefits of the lease must be held liable to the terms imposed by the lease, and must consequently pay for the dilapidations.

It was suggested in the case that the reversioners should either have re-entered the premises, or in lieu of re-entering have imposed terms on the liquidators, during the currency of the lease; but the Court pointed out that, as the covenant only provided that the lessees were to deliver up the premises in good repair at the end of the term, until the term came to an end they had no remedy under the covenant.

The Prevention of Corruption.

The Prevention of Corruption Act is entitled "An Act for the better Prevention of Corruption," and in Section 1, Sub-section 1, various offences are defined. In the first place, if any agent corruptly accepts or obtains or agrees to accept or attempts to obtain, from any person for himself, or for any other person, any gift or consideration as an inducement or reward for doing or forbearing to do any act in relation to his principal's affairs or business, that is one offence. Then another offence is corruptly to give or agree to give or to offer any gift or consideration to an agent with a like object.

A third offence set out in the sub-section has recently received judicial interpretation. The Act provides, "If any person knowingly gives to any agent, or if any agent knowingly uses with intent to deceive his principal, any receipt, account or other document in respect of which the principal is interested, and which contains any statement which is false or erroneous or defective in any material particular, and which to his knowledge is intended to mislead the principal," that is an offence. In the case in question, Sage *v.* Eicholz (1919, 2 K.B., 171), the offence charged was under this last paragraph.

It was the practice of the Metropolitan Water Board to make an allowance from the water rate in respect of any portion of premises which had been left unoccupied during any part of the quarter, provided a claim was made. The defendant had called at one of the offices of the Board and handed to the receiving officer there a claim for unoccupied periods in respect of six separately assessed tenements, which claims he had signed after filling them up. This claim was not correct.

The receiving officer's only duty was to forward the claim to the officer responsible for the rates in the district, and this latter officer also, in accordance with his duty, had made the allowance claimed. It will thus be seen that neither of the agents had been guilty of corruption, or had acted otherwise than in good faith and in accordance with their duties.

The magistrate at the close of the prosecution of the defendant had dismissed the information on the ground that the Act only applied to the corruption of agents, and here no agent had been corrupted, and he also held that the words in the last paragraph of the section quoted above, "and which to his knowledge is intended to mislead the principal," applied only to the agent and not to the person giving the document.

The Court remitted the case to the magistrate to be tried, as it held there was a *prima facie* offence under the Act, the substitution of the word "knowingly" in the last paragraph for the word "corruptly" used in the first two paragraphs must be given effect, and "his" knowledge refers to either of the parties mentioned in the section, that is, to the person giving the document as well as the agent.

It may be observed that this reading of the Act applies it quite apart from any corruption or attempt at corruption of an agent, but makes the person knowingly giving a false return with intent to deceive guilty of an offence, but there is one difficulty in this construction of the section which does not appear to have been explained by the Court, which is, why is the word the "principal" used in the section, if the Act is to apply irrespective of any irregularity as regards the agent? In other words, why is it more an offence to make a false return through an entirely innocent agent than to deceive any person direct? In either case, the person so making a false return might possibly be guilty of obtaining money under false pretences under the criminal law; but it is difficult to see why this statute made this a special offence and used the expression "the principal," if the agent plays no part at all in the matter, but is merely a conduit, acting innocently, and the element of corruption is absent.

Counsel for the defendant had argued that the title to the Act must be taken into consideration as showing that some corruption of the agent must enter into the offence, but the Court held that where the language of the Statute is unambiguous the meaning cannot be cut down by reference to the title, and the word "knowingly" was substituted for "corruptly" in the third paragraph with some object, doubtless to meet the case where corruption of an agent could not be proved.

The Statute has always proved a difficult one to interpret, but persons dealing with agents will do well to note the decision now given that if they present to an agent a document intended to deceive the principal an offence is committed, although the agent is untampered with and is innocent of the contents of the document.

Overhanging Trees.

In laying out new estates and gardens there is always a tendency to plant trees too near the boundaries, as the growth is rarely sufficiently allowed for, and the result sometimes is to cause litigation between adjoining owners. The latest case on this subject is Mills *v.* Brooker (1919, 1 K.B., 555).

The plaintiff and defendant were neighbours. The report uses this expression and does not state whether they were owners or occupiers. The plaintiff's apple trees overhung his boundary, and the defendant picked from the branches which overhung his property several bushels of apples and sold them. The plaintiff brought an action for conversion. In his defence the defendant contended that as he had the right to lop branches overhanging his ground he must possess the right to pick the fruit from those overhanging branches.

The Court negatived this contention, holding that the position was different. If an adjoining neighbour lopped overhanging branches of trees, even without giving previous notice, he would not be committing a trespass (Lemmon *v.* Webb, 1875, A.C. 1), but that right rested on the fact that the branches constituted a nuisance. This right to abate a nuisance does not, however, carry with it the right to appropriate the severed branches or the fruit growing on them.

The Village Club, Aston-sub-Edge.
MR. E. GUY DAWBER, F R.I.B.A. Architect.

HOUSING AND TOWN-PLANNING NOTES.

Brighton.

As part of its extensive housing scheme, which is under the general direction of Professor Adshead, F.R.I.B.A., the Town Council has selected a panel of local architects for the garden village in the Moulscombe Valley, and has divided the work of erection of the 450 houses between them. The panel consists of Messrs. Clayton and Black, Messrs. T. Garrett & Son, Mr. W. T. Overton and Mr. E. Wallis Long. The roads and sewers, &c., are being constructed under the supervision of Major G. H. Clements, M.C., the deputy Borough Surveyor, and the ceremony of turning the first sod was performed last week by Sir Kingsley Wood, M.P.

Braintree.

Members of the Corporation last week inspected the concrete houses which are being built for the Crittal Manufacturing Co., Ltd., on the Clock House Estate, Braintree. Some thirty houses are in course of erection, and altogether about seventy are to be erected. The houses are detached and semi-detached, and are built in blocks of varying numbers up to eight. The larger houses have a living-room, parlour, larder and scullery on the ground floor, with three bedrooms and a bath-room above, and detached coal stores and offices. The smaller type houses consist of living-room, larder, scullery and bathroom combined, and three bedrooms. The houses are built eight to the acre. Window-sashes and stairs are of steel, and the floors are of concrete covered with composition. No wood is used except for the doors.

Dunfermline.

The final inquiry into the Town Council's town-planning scheme was conducted by Mr. David Ronald, architect to the Scottish Board of Health, last week. The town clerk said that the preparation of a scheme was authorised in 1912, and plans were lodged with the Board in August, 1915. He regretted the lapse of time that had taken place in the preparation of the scheme. During the intervening period, the Scottish National Housing Co. had erected a large number of houses at Rosyth and in the south-eastern portion of the borough, and tramways were in operation. The Town Council proposed to erect 350 workmen's houses at Brucefield, within the area, and 150 at Townhill. One of the main objects of the scheme was to regulate the development of the borough towards the naval base. The promoters had been met in a very fair manner by the landowners, and agreements with them have been concluded.

Marylebone.

At a meeting of the Board of Guardians last week it was stated that proposals to erect factories in the district would result in the eviction of 136 families. It was resolved to request the Housing Committee of the Borough Council to make representations for the withdrawal of the plans of the proposed factories, until other accommodation had been found for the inhabitants of the site. The Ministry of Health was also appealed to in the matter.

Government Housing Scheme.

The Ministry of Health has issued a return showing the number of housing schemes submitted by local sanitary authorities, county councils, and public utility societies. Up to July 31, 3,879 schemes had been submitted by 995 local authorities and 54 public utility societies. The area of the 3,541 sites for which the information is given is 37,288 acres, and the area of the 3,879 schemes is estimated at 39,500 acres. The Ministry has approved of 1,145 sites, covering 16,840 acres; 615 schemes for lay-outs have been submitted, of which 281 have been approved; 385 applications, covering 21,811 houses, for the approval of house plans have been received, in addition to some cases in which type plans have been submitted. Of these applications 201, which provide for 13,065 houses, have been approved. Of the total number of schemes, the London County Council and the Metropolitan Borough Councils have submitted 19, and in 13 instances the sites have been approved by the Minister. The total area of sites is 875 acres, plus three cases in which the areas are not stated. County boroughs have submitted 267 schemes, with an acreage of 12,069.76, and 152 sites have been approved. In eight cases the areas have not been stated by the authorities. Boroughs and urban districts with a population of 20,000 and over have prepared 316 schemes, with an acreage of 7,090.27, of which 152 sites have been approved. In seven instances no information has been given as to th extent of the areas. The schemes submitted for boroughs and urban districts with a population of less than 20,000 number 720, the sites in 317 cases having been approved. These 720 schemes have an acreage of 8,177.33, while in 25 cases the area is not stated. For the rural districts 2,420 schemes have been sent in, and 499 sites have been approved. The acreage, excluding 263 cases in which the area is not stated, is 6,403.77. Five county councils have prepared 85 schemes, but only one site has been approved. The 54 public utility societies which submitted 56 schemes have had 14 sites approved, and the acreage involved in the schemes is 2,745.71. A statement is also given showing the districts where work has already been started on schemes of local authorities and public utility societies. Complete information is not yet available, but work is in progress on projects which when completed will provide for 7,970 houses. Abercorn Urban District Council heads this list with 721 houses, followed by Sheffield with 653, Bradford with 578, and Swansea with 500. In some cases the work is only as yet on streets and houses.

Nottingham Housing Competition.

The design placed third in the Nottingham Housing Competition, attributed in our last issue to Mr. S. Pointon Taylor, was the joint work of Messrs. S. Pointon Taylor, Reginald Dann and Longstreth Thompson.

The Hall, Heath Lodge, Headley. MR. E. GUY DAWBER, F.R.I.B.A., Architect.

WEEKLY HOUSING RETURN.

The return of housing progress issued weekly by the Ministry of Health states that the number of new schemes submitted to the Ministry during the week ended September 13 was 164, bringing the total number of schemes submitted by local authorities and public utility societies to 4,840, comprising approximately 45,000 acres. The total number of schemes approved is 1,561, comprising about 19,000 acres. The number of house-plan schemes submitted is 540, representing 32,743 houses. House-plan schemes, representing 20,112 houses, have been approved.

Further arrangements have been made in regard to the acquisition of war-service huts and hostels by local authorities for conversion into temporary dwellings. The huts and hostels can either be converted *in situ*, in which case they may be either purchased or leased, or they may be purchased and removed for conversion elsewhere. In the case of huts to be used *in situ*, arrangements for the acquisition of the land on which the huts stand will be made with the owner by the local authorities and they will assume full liability for the re-instatement of the land. They will, however, receive from the Government department concerned a sum agreed upon as equal to the estimated sum which it would have cost the Government department to reinstate the site if the land had been vacated at the time of transfer. In the case of the huts taken on lease, the rent of them charged to the local authority by the Ministry will be based on a valuation, less 33⅓ per cent. discount. At the end of the period of the lease, the huts will revert to the Surplus Government Property Disposal Board. The huts will then be sold and the local authority will receive such part of the proceeds of the sale as is in excess of the value of the huts as estimated at the time when they were leased to the local authority. In the case of purchase of huts, local authorities will be allowed a discount of 33⅓ per cent. below a valuation to be made by the Disposal Board or, where their valuation is challenged, by an independent valuer. Arrangements have been made with the Government departments concerned for the evacuation of camps required for temporary housing purposes to be expedited.

The Ministry calls attention to Section 12 (3) of the new Housing Act, by which a local authority may contract with a private builder for the purchase of houses to be thereafter erected by him. In many cases, this may prove to be an economical and expeditious arrangement. Small builders may have partly developed sites in their possession on which a few houses could be erected, and large estate developers, who have other building operations in hand, may have resources at their disposal which would be applied, with a considerable saving of expense, for the erection of working-class houses. Private builders who consider that they could put in hand at once the building of a few cottages at a relatively cheap rate should, therefore, communicate with their local authority, and submit proposals for consideration.

The London Housing Board has inspected about 3,400 of the 4,000 houses included in the returns made by the Metropolitan Borough Councils of the number of houses which might be regarded as suitable for conversion into flats in the London County Council area. Up to now about 1,100 houses have been scheduled by the Board as generally suitable and likely to be available for conversion at an early date.

Details of local authorities' schemes dealt with during the week are as follows :—

Building Sites.

Schemes Submitted.—The number submitted, by 47 local authorities, was 146, bringing the total to 4,774, covering approximately 41,600 acres. The new schemes were as follows :—

URBAN.	ACRES.
Scunthorpe (3 sites)	164.08
Ogmore and Garw (2)	79.18
Gateshead	65.33
Burnley (2)	65.00
Little Hulton	57.73
Caerphilly	47.50
Bredbury and Romiley	38.00
Bacup (3)	26.50
Abingdon	22.22
Hendon	22.03
Barrow-in-Furness (3)	17.70

Arnold, 8.63; Cheadle and Gatey, 3.75; Chorley Wood (3), 6; Great Torrington, .95; Marlborough (3), 3.48; Pudsey, 6.36; Queensbury, 8.92; Stowmarket, 2.46.

RURAL.	ACRES.
Bradfield (16 sites)	38.64
Pontefract	35.75
Boston (27)..	25.50
Lymington (4)	17.02
Plomesgate (6)	14.38
Penybont	10.63

Bakewell, 1.68; Blandford, .25; Brecknock, (9), 3.32; Depwade, 1; Dorchester, (5), 6.25; East Preston (5), 6.37; Gloucester (2), 3.99; Hallaton (5), 7.26; Howden (5), 8.68; Hungerford (2), 3.9; Marshland, 2; Mere, 2.11; Northwich, 4.1; South Shields (4), 9; Spilsby (10), 8.34; Steyning West, 5; Stratford-on-Avon (9), 6.5; Sturminster (5), 3.79; Tendring (2), 3.75; Uckfield, .5; Wantage (6), 7.54.

COUNTY COUNCIL.—Yorkshire (West Riding), 3.50.

Schemes Approved.—Seventy-three schemes were approved, comprising 382 acres. This brings the total to 1,542, covering approximately 18,400 acres. The schemes newly approved were as follows :—

URBAN.	ACRES.
Little Hulton	57.73
Caerphilly	47.50
Erith (2 sites)	16.00
Stretford	21.04
Wakefield	47.10
Weybridge	19.68

Brandon and Byshottles, 6.25; Woking, 6.19; Worsley, 4.

RURAL.	ACRES.
Neath	22.74
Buntingford (6 sites)	14.82
Barnack (3)	12.51
Banbury (4)	10.83

Ashwell, 2.85; Bath, .75; Berkhampstead, (2), 1.72; Beverley, 1; Brailes (3), 3.72; Brixworth (2), 1.13; Chipping Sodbury, .5; Depwade (4), 6.5; Dunmow, .75; Escrick (3), 2.77; Eton, 2.82; Forehoe, 1.5; Godstone, 2.37; Hardingstone, 2; Huntingdon, 1; Kettering, 1; Lanchester, 8.11; Malling, .25; Newport Pagnell, 7.81; Northampton, 9.47; Plympton St. Mary (2), 4.5; Settle (4), 7.05; Sunderland, 8.08; Tisbury (3), 1.57; Wallingford, 2; Westbury and Whorwellsdown, 1.5; Wincanton (3), 5.4; Wing, 2.55; Wirral, 2; Wokingham (2), 2.69.

COUNTY COUNCIL.—Somerset, 0.76.

Lay-Outs.

Schemes Submitted.—Thirty-seven schemes were submitted, by 25 local authorities, bringing the total to 851. The new schemes were as follows :—

URBAN.—Abram, Amblecote, Chorley, Gosforth, Heywood, Maldon, Merton and Morden, Nantwich, Ormskirk, Plymouth, Rothwell, St. Austell, Warrington, Wednesfield.

RURAL.—Chirk, Depwade (5 sites), Highworth, Howden, Lanchester, Lymington (3), Oswestry, Preston, Swansea (7), Uckfield.

COUNTY COUNCIL.—Yorkshire (West Riding).

Schemes Approved.—The following 23 schemes, promoted by 22 local authorities, were approved during the week, bringing the total to 436 :—

URBAN.—Birkenhead, Brighton, Buckingham, East Barnet Valley, Great Berkhampstead, Hereford, Horsham, Luton, Maidstone, Salford, Shepshed, Sunbury-on-Thames, Wednesfield.

RURAL.—Crowmarsh, Eaton Socon, Hemsworth, Henley, Oswestry, Penybont, Wantage, Westbourne, Williton (2 schemes).

House Plans.

Schemes Submitted.—Fourteen full schemes and three part schemes, representing 837 houses, were submitted by 13 local authorities. This brings the total to 512, and the number of houses to 28,233. The new schemes are :—

URBAN.—Maldon, 16 houses; Chesham, 14; Ilford, 86; Irlam (part scheme), 101; Manchester (part scheme), 244; Prestwich (part scheme), 50; Sheffield, 10; Warrington, 56; Wednesfield, 60.

RURAL.—Depwade (5 schemes), 28; Henley, 4; Oswestry, 160.

COUNTY COUNCIL.—Yorkshire (W. Riding), 8.

Schemes Approved.—Twenty-one full schemes and three part schemes, promoted by 20 local authorities, were approved, bringing the total to 321, and the number of houses represented to 19,634. The schemes newly approved are as follows :—

URBAN.—Bedwellty, 96 houses; Brighton, 14; Hereford, 12; Horsham, 60; Ipswich, 18; Irlam (part scheme), 101; Manchester (part scheme), 244; Pontefract, 164; Prestwich (part scheme), 50; Sherborne, 66; Stockton-on-Tees, 122; Wednesfield, 60.

RURAL.—Crowmarsh, 20; Eaton Socon, 6; Henley, 4; Huntingdon (4 schemes), 24; Oswestry, 160; Wantage, 6; Westbourne, 4; Williton (2), 14.

Ebbw Vale.

The Council has received Government sanction to a scheme for the erection of 3,000 houses, the total cost of which is expected to exceed £2,500,000. The site will be planned on garden city lines, and will involve the rebuilding of practically the whole of the slum districts in the town. The type of house selected will cost £770.

Windsor.

The Town Council is arranging for the purchase of about five acres of land, for £830, for the erection of fifty houses, and application for sanction to a loan has been made to the Ministry of Health.

Ealing.

At the suggestion of the Ministry of Health, the Town Council has decided to dispense with the four-bedroom type of house in connection with its housing scheme, on the grounds of expense, and parlour and three-bedroom houses are to be substituted. It is estimated that these houses will cost £120 each less to build. By carrying out other suggestions of the Housing Board's quantity surveyor, a further £90 per house will be saved, and the total saving on the 103 houses will amount to nearly £10,000. The Town Council has agreed that a larger number of houses with parlours shall be included in the second part of the scheme, comprising 136 houses.

Glasgow Housing Exhibition.

The following is a list of some of the firms who have already taken space for stands at the Housing and Health Exhibition, which is to be held at the Kelvin Hall of Industries, Glasgow, from October 8 to November 1, 1919 :—Bell's United Asbestos Co., Ltd., Saint Enoch Paint & Varnish Co., Modern Office Equipment Co., Ltd., Frank G. Price & Co., Wm. Maclean, Sons & Co., D. Anderson & Son, Ltd., M. Andrews & Forbes, Ltd., Bitumen Products, Ltd., Pinchin, Johnson & Co., Ltd., Wm. McGeoch & Co., Ltd., Brownlee & Co., Ltd., James Meighan & Son, Simplex Floor Planing Co., W. & T. Nicholson & Clipper Co., Ltd., Richmond Gas Stove Co., Ltd., Patent Safety-Cleaning Window Co., Mr. John Whitehead, Jackson, Alphick & Co., Ltd., The Ramie Co., Ltd., Curtis & Harvey, Ltd., M. Cockburn & Co., Ltd., John Tann, Ltd., Falkirk Iron Co., Ltd., Melville, Dundas & Whitson, Winget, Ltd., Carron Co., Leeds Fireclay Co., Ltd., Electric Suction Cleaner Co.

HEATING AND VENTILATION.

CENTRAL HEATING FOR SMALL HOUSES.

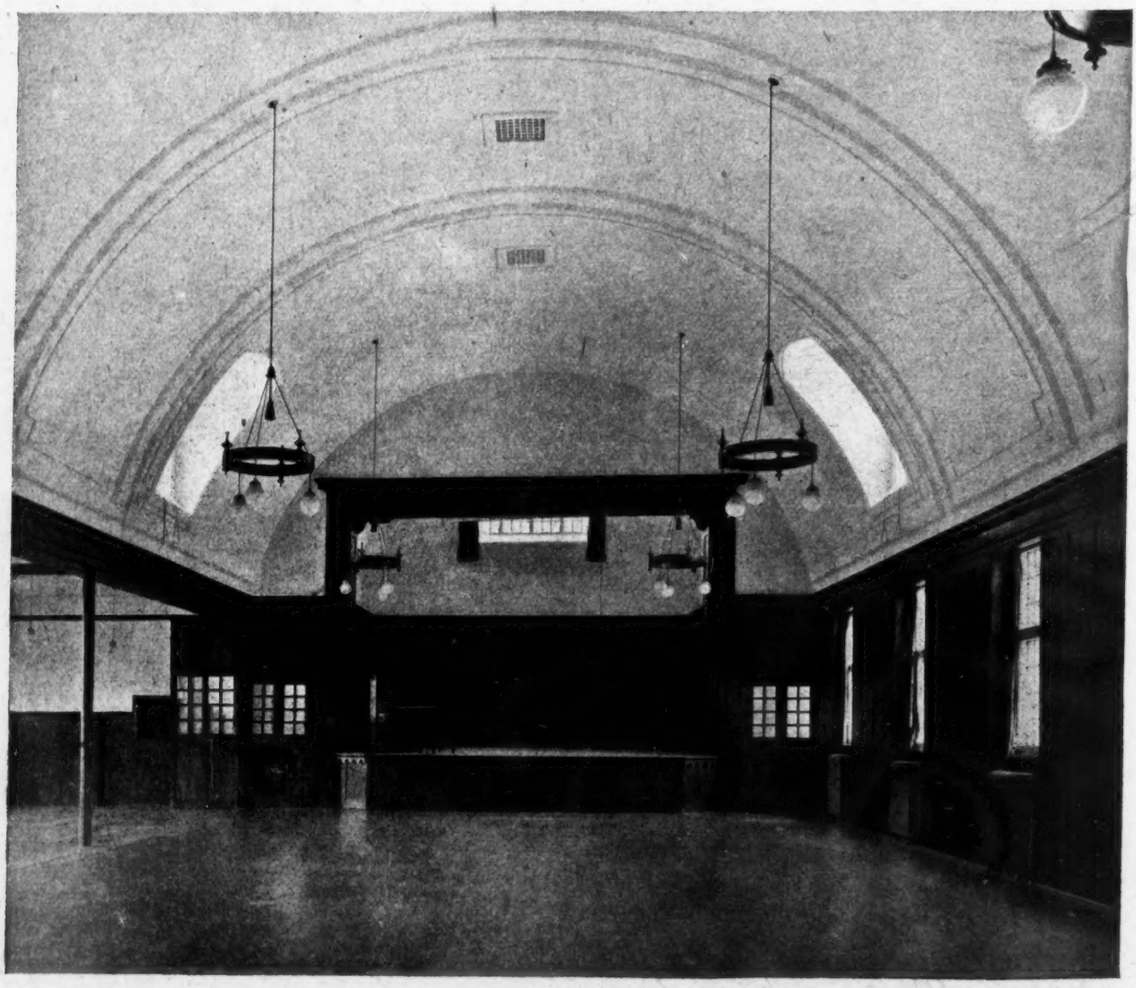
JUST as an inanimate object resists an attempt to change its state of motion or rest, so, too, mankind not only resists, but resents any attempt that is made to change his habits and mode of life, and so the history of progress presents itself as a long continuous struggle against this human tendency towards inertia. The change, however, having eventually been accomplished, the benefits of it are for the most part appreciated by a subsequent generation, which wonders at the stupidity of a past age in attempting to oppose an innovation, the merits of which have by this time become so apparent to all; yet at the same time it fails to appreciate that its own attitude towards the efforts of the more progressive thought of the day is generally of precisely that kind which it does not hesitate to condemn with regard to the past. Unforeseen circumstances, however, often play an important part in the attempt to overcome this resistance to progress. As a nation we are persistent in cherishing the open fire with characteristic obstinacy, despite the fact that those who are conversant with the facts are insistent in their denunciation of it as an inefficient and uneconomical method of heating, and it may well be that the present high price and shortage of coal, which threatens to grow ever more acute, will cause us to give due consideration to other and more economical means.

Central heating is already recognised as a serviceable means of heating blocks of flats and offices, public buildings and the like, but it has only been applied in the most tentative manner to small houses and cottages. The reason of this is largely due to the fact that the tenants themselves fail to realise the great advantage and saving which such a system will afford them, and they demur at paying a slight increase to their rents for such services, which are, for the most part, entirely incommensurate with the saving effected in outlay for coal and lighting. An admirable example of this absurd mistrust of an obviously advantageous innovation presents itself in connection with some Army huts which have recently been converted into dwellings, to which it was proposed to supply electric light, gas for cooking, central heating, and a constant supply of hot water for an additional inclusive charge of 2s. per week to an already low rental. The tenants objected to the increase. It is consequently no longer a matter for surprise that progress in matters of this kind must proceed at a slow rate.

By far the largest and most comprehensive enterprise of this description that has ever been undertaken in England is that at Swanpool, Lincoln, which will be watched with great interest by all those who realise the extensive, and yet unexplored, possibilities, that exist in the matter of centralised services of heating, lighting, and hot water supply.

The Swanpool Garden Suburb was originated by the Swanpool Co-operative Housing Society, Ltd., and comprises a lay-out of about 370 acres and provides for the erection of some 2,500-3,000 cottages, together with shops, public buildings, places of worship, baths, factories, and all that pertains to a self-contained community. The architects are Messrs. Thompson, Hennel & James. A central station is to be built from which it is proposed to provide heat in all the rooms at a temperature of 60 degrees in the living rooms and 55 degrees in the bedrooms. This will be effected on the ground floors by means of radiators, and on the upper floors by means of coiled pipes. A constant hot water supply to the baths, lavatory basins, scullery sinks and coppers, electric light for cooking and lighting purposes will also be available.

The entire service is from a single power station at which the steam is generated in high pressure water-tube boilers to serve turbo-generators, which produce the electrical energy required for cooking and lighting in all the houses and the public buildings. The exhaust steam from these generators is passed through a number of calorifiers to heat all the water which is required for the various services. These boilers are to be fitted with superheaters and fuel economisers, one section of economisers being used to heat the make-up water required for domestic purposes. This



Interior of Parish Hall, New Brighton, Cheshire.
Mr. E. GUY DAWBER, F.R.I.B.A., Architect.

water is already heated to a small extent by means of exhaust steam from the various station auxiliaries. In this way it is hoped to eliminate every possibility of failure to utilise waste heat to the utmost.

In the summer the heating service load will entirely disappear, hence it is necessary to find a use for the exhaust steam. Arrangements are being made to provide for this by process work in the factories, which will be attached to the garden suburb, and which will be contiguous to the power house. The maximum strain upon the hot water service will occur at certain regular times of the day, and in order to keep the load more or less constant, certain subsidiary services such as a swimming-bath and a laundry are worked from the same system

Fortunately, the water at Lincoln is particularly pure, consequently no special precautions are necessary in respect of it, and the heating and domestic services can be provided for by the same mains. It will be necessary to construct about 30 miles of mains, and these will be carried in specially made ducts which will also contain the electric mains. They will be laid, as far as possible, under the pavements, thus rendering them more accessible for repairs, and less liable to damage resulting from heavy traffic, steam-rollers and the like. The engineers for the whole of this work are Messrs. G. N. Haden & Sons, Ltd., of Kingsway.

It is to some degree a matter of speculation as to what extent such a comprehensive scheme would prove to be suitable and economical for a small number of houses, but in a community of 100 houses it might well prove to be worth while, particularly in a district in which a plentiful supply of pure water is available. Where hard water is to be had, an indirect system would have to be arranged, which would necessitate a duplication of the mains in order to separate the heating and the domestic services. In such a case each house would be provided with its own storage tank which would be heated by means of coils. In a system which did not generate electricity, it would be necessary to install small gas cookers.

Under the Electricity Supply Bill it will not be possible to construct or extend any generating stations without the consent of the commissioner of the district, and it may therefore be likely that should many small local schemes develop on the lines indicated above, the Board of Trade, or subsequently the Ministry of Ways and Communications, will combine them into one of the super-power stations which it is their intention to construct.

The idea of a system of central heating per unit dwelling is one which is capable of considerable development, and an interesting apparatus is about to be patented by Mr. Brittenden, the elements of which consist of a small boiler suitably and inconspicuously arranged around an ordinary slow-combustion stove, from which emanates a simple low-pressure circulating system to the upper-floor rooms. The main objection to a low-pressure system is the necessarily large-sized pipe, which is usually so unsightly. Mr. Brittenden proposes to overcome this difficulty to some extent, by carrying his flow and return pipes as far as possible in the chimney flue. Another difficulty in a scheme of this description, is that of obtaining a sufficient area of direct heating surface.

In many of the houses which, under the new Housing Act it is proposed to convert into self-contained dwellings, particularly in cases in which several small houses are grouped together and it is intended to accommodate a caretaker, the installation of a system of central heating and hot water supply would be of inestimable value, more especially when it is remembered that it is often only possible to contrive a very limited space for fuel-storage in connection with each dwelling. Until, however, it is thoroughly realised that an increase in the rent in respect of such services so provided does not represent an imposition, but little advance is likely to be made towards a general provision of such services.

H. J. B.

THE HEATING OF COTTAGES AND FLATS.

WITH the season advancing and the recent cold spell to remind us, all our thoughts are turning towards the subject of heat. The problem, how best to heat our homes, has loomed greater than ever in recent years, owing to the lack of efficient domestic labour, and not the least of our troubles are the difficulties met in getting coal in sufficient quantities as and when we require it. Moreover, there is an insistent demand from working and lower-middle-class people—who do not, or cannot afford to, employ anyone to assist them domestically—for labour-saving devices to be introduced into their homes, in order to reduce the daily round of duties, pleasant and otherwise, which are connected with running the average house built in pre-war days. Such labour-saving devices as gas cooking stoves, water heaters and gas-heated coppers, though very topical subjects at the present time, when so much interest is being shown in connection with all matters appertaining to housing schemes, must be merely mentioned in passing, as the purpose of this article is to deal with the heating question, and to put forward a plea for a more extensive installation of gas fires, especially in the houses and flats which are to be erected in such large numbers in the coming years. It may be said that this is not altogether a new suggestion, or that there is an enormous number of gas fires in use at the present time. This is quite correct, and when it is borne in mind that we are again faced with the probability of trying conditions in the coming winter as regards deliveries of coal, it is good to know that there are a number of happy mortals who are already provided in their houses with gas fires, as with certain minor exceptions the supply of gas throughout the country has seldom failed the public, and though gas is, unfortunately, high in price and is still rationed, the price of coal has increased to a comparatively greater extent. If the rooms in which gas fires are installed are not in constant, all-day occupation, they prove quite economical as regards cost, and do not place an undue strain on their users' fuel ration.

When considering the possibilities attached to a more extensive installation of gas fires, however, there are other features to be borne in mind, such as coal conservation and national economy. As regards coal conservation, scientists and expert authorities such as Lord Moulton, P.C., K.C.B., F.R.S., Sir Dugald Clerk, F.R.S., Professor John W. Cobb, C.B.E., B.Sc., F.I.C., and others, have clearly stated that the nation gets much greater value out of the coal consumed when it is carbonised at a gas works, than when it is burned in an ordinary grate, because, when carbonised, there are so many residuals, such as coke, chemical manures, benzole, tar, &c., which are entirely lost to the nation if the coal is burned in its raw state.

The individual tenant, however, who has to foot the bill, has to ask himself whether he can afford to use gas fires entirely for heating (perhaps running up a heavy gas account) in order that the nation, which, after all, includes himself, shall reap all these advantages. The answer, of course, is that if the account which he is likely to receive if he entirely heats his house with gas is more than he feels he can afford to pay, he should use gas fires to the extent of his pocket, or to the extent that they are certain to cost him no more—or perhaps less—than coal would to heat the same rooms, for the requisite periods that heat is required. If he does this, he will gain the undoubted advantages of saving of labour, convenience, and lack of dust and dirt with less wear and tear on his furniture, at absolutely no cost to himself, while assisting to conserve the nation's fuel, and to provide motor spirit, dyes, and certain chemicals which have hitherto been necessarily purchased from abroad. This, of course, could truly be claimed as furthering the cause of national economy, but now let us view national economy from another standpoint. As we have previously stated, there is a very large number of gas fires already in use, but we would still ask the following question. Do these gas fires represent national economy to the extent that they could, or would do, if their installation had been originally carried out in the best possible manner?

It was unfortunately a habit with many builders in pre-war days, to purchase for houses that they were erecting for lower middle and working-class tenants—or even in some cases superior-class tenants—all kinds of shapes and sizes of coal grates, and to install these in rooms in haphazard fashion, with no apparent attempt to ensure that their capacity corresponded with the area of the room to be heated. In some cases, a grate far too large for the room was to be found, which undoubtedly caused a subsequent waste of coal, but in all too many cases it was *vice versa*, and the grate was far too small for the room which was to be heated. What was the result? A tenant would take a house, and in the first winter would discover that in some of the rooms it was impossible to keep—or even to get—warm and, therefore, quite apart from all other considerations which might have led him to install a gas fire, had, perforce, to have one of adequate heating capacity fixed in front of the existing grate, which probably from that moment for the remainder of the life of the house would remain unused, and thus entail an absolute waste of labour and materials. That sort of thing is not national economy, and with the country in its present position, such errors should no longer be committed. No one ever really gains by waste, and it is nothing less than sheer waste to have two appliances thus installed for a single purpose, one of which appliances represents precious labour and materials lying idle, which might well have been diverted to better purposes, possibly to the production of goods for sale overseas to help improve the national financial situation. The individual cost of one instance of these unnecessarily and wastefully duplicated appliances may be small, but the aggregate saving to the nation if such cases are not permitted to occur in the future, would be enormous.

The next question, of course, is what suggestions are offered to remedy this admitted evil in the case of houses that are to be built in the future. One natural suggestion is that if a slow combustion grate of modern pattern is being fitted in any room, it should always be carefully chosen to see that its capacity is sufficiently large—and not over large—to heat the room in which it is to be placed. Our further suggestion is connected with the installation of gas fires. There is no doubt that until the price of gas is reduced, its use for heating the living rooms of tenants of small or moderate means is scarcely safe to recommend, but for all those rooms which are intermittently heated, such as parlours, bedrooms, drawing rooms and studies, the cost of gas as a fuel is no more, and usually less, than the cost of coal and wood, without taking into consideration all the other advantages to which attention has frequently been drawn.

From the health point of view it may safely be said that the hygiene of gas fires is no longer questioned or questionable, as modern scientific methods have led to their being constructed to give the greater part of their heating efficiency in the form of radiant heat, with a small amount of convected heat, the remainder being utilised to create a ventilating effect in the flues to remove the products of combustion and to assist the movement of air in the room. The confirmation of this statement lies in the fact that gas fires may be found in large numbers in hospitals, nursing homes, and tuberculosis dispensaries, and in

the houses of medical men, medical officers of health, &c. Therefore, when erecting houses, why should it not be the custom to install gas fires of what are known as the "built-in," "complete gas grate" or "gas interior" type as a part of the building operations, in all rooms that are usually intermittently heated, or, as is the case in bedrooms of working-class houses, seldom heated at all?

If coal grates are installed in such rooms, the women cannot be bothered with lighting fires and cleaning up afterwards; moreover, a coal fire in a bedroom is only worth lighting at exceptional times—such as a case of severe illness—because it cannot possibly be used for half-an-hour or so night and morning, which is really all that is necessary—and that only in severe weather—in by far the greater majority of cases. Elderly or sickly people would welcome the boon of being able to obtain such comfort at an extremely low fuel cost, and there is no question that many an illness, sometimes fatal, results from undressing in an icy-cold bedroom after leaving a comfortably warm or overheated sitting room. Again, take the parlour, for instance. If a friend calls in on a winter night, or one of the children has to endure an hour's piano practice, it is not economical or reasonably possible to light a coal fire for such purposes, quite apart from the trouble attached to clearing up the dead ashes of the dear departed fire next morning. If gas fires of the type mentioned were installed in such rooms when our new houses and flats are constructed, they would surely prove a great boon to the tenants. It would only be necessary to fit them against the wall, with a tiled backing and a plain surround and mantel, making a very simple and artistic finish. Then, only one appliance would ever be likely to be used in each case, and subsequent material waste would be avoided.

It would seem also that the national economy ensured by such a system would even go beyond this, as was shown in articles which have appeared in our pages on September 24, 1915, and July 4, 1919, the latter entitled "Gas Fires and Economy in Building." This article set out the facts that in the case of a block of offices in the City of London gas fires of the type mentioned were being installed, and that as no coal fire flues or chimney breasts were being built there was a resultant saving of £180 in the cost of building, accompanied were increased floor space and cubic capacity. The gas fires in this case will be ventilated into shafts 12 in. by 3 in. built within the thickness of the wall, but 9 in. by 3 in. would appear to be large enough in smaller rooms. The article mentioned that the architect concerned in this building had also worked out the possible saving if a pair of cottages were thus dealt with, and placed the figure at £60 per pair, or £30 per cottage, and that Mr. W. J. Swain, architect to Messrs. Rowntree & Co., Ltd., of York, who had carried out a considerable amount of experimental work with a view to improvements and economy in building construction in connection with the building of cottages on the Rowntree Garden Suburb, at New Earswick, York, &c., has also given as his considered opinion that a saving of about 5,000 bricks and £42 per cottage might thus be effected. A similar suggestion as regards building cottages upon new and more scientific principles was contained in a letter from Mr. John Murray, F.R.I.B.A., which appeared in the *Builder* dated April 12, 1918. When all the advantages are borne in mind, it would seem difficult to find a sufficiently strong argument for such building practice being carried out now and in the future. After all, when once installed, gas fires cost nothing unless used; they are simply there in case they are needed.

THE GOVERNMENT STANDARD SPECIFICATION.

When on this subject, however, perhaps it is pertinent to remark that while a demand for labour-saving appliances and modern conveniences in housing schemes has been heard on all sides from working women, housing reformers, &c., the Government Standard Specification recently published does not appear to mention gas water heating at all, and also sets out that the flues to all rooms shall be no less than 9 in. by 9 in. It is possible that the saving in building costs as suggested above and in our previous articles, may not have been put before those responsible for drawing up the Standard Specification, but it would seem that having in mind the public demand—and the absolute crying need—for economy, no avenue should be left unexplored in the search for satisfactory and practical methods of reducing building costs. A saving of £30 per house is certainly very well worth achieving, if it can be obtained with no disadvantage—and apparently a substantial advantage—to the prospective tenants and to the nation. We note that the following paragraph appears at the heading of the Government Standard Specification, as published in our issue of September 12, 1919: "Except where variations from this standard form are rendered desirable by local conditions, the Ministry of Health will not be prepared to approve of schemes which show deviations from this form." It would be interesting to know whether a local body or public utility society would have its scheme turned down if it were desirous of installing gas water heating as an adjunct to the coal fire boiler, in order that there would be no need to use coal fires in the hot weather, or if desirous of economising in the cost of building construction by adopting the above-mentioned system, and installing gas fires in rooms likely to be intermittently heated or not heated at all, they also having in mind the ultimate economy which would be ensured by the fact that a large number of coal grates would not be installed in rooms, subsequently to meet the fate which we have so often noted, *i.e.*, to have gas fires stood in front of them, as and when the tenants decide to go in for labour-saving appliances themselves.—A. B.

CENTRAL HEATING SYSTEMS.

In order to relieve the pressure on house space, the Government Committee on the Provision of Dwellings for the Working Classes recommended that the supply of hot water to housing areas from a central area was very desirable, and that experimental schemes on an adequate scale should be encouraged. Central washing establishments also would relieve individual houses from the mess necessarily connected with "washing-days." The necessity for open fires and kitchen ranges is reduced to a minimum, and the resultant economy of fuel is a point of great importance at the present time. The system is particularly applicable where waste heat from refuse destructors or factories is available. Such systems have been successfully installed in many large public and other buildings, and a report issued by engineer-in-charge of the Toxteth Institution, Liverpool, contains some striking figures regarding the saving effected by the installation of a central heating system, carried out by Messrs. Dargue, Griffiths & Co., Ltd., of Phœnix Works, Liverpool. The plant was substituted in place of an old system, which had separate calorifiers in each block, supplied with live steam. The existing circulations were not disturbed, but coupled up to the new "D. G. Economic Centralised" system, and the hospital section, which had no hot-water heating, was fitted throughout. After the first year's working it was found that the cost of coal, water and gas had been reduced by £1,909 during the twelve months. Extra labour cost £252, and interest and redemption on the borrowed capital amounted to £1,335, leaving a net profit of £522, and this in spite of the fact that the price of coal had increased by 50 per cent. as compared with the previous year.

The painting work and art decorations at the Lyric Theatre, which has recently been re-opened, was carried out by Messrs. Patman & Fotheringham, Ltd., of Park-road, Islington N. 1.

BUILDING TRADE WAGES.

An arbitration was held at the Court of Arbitration, Westminster, last week on the wages and working conditions of building trade operatives in South Wales and the West of England. Among those represented were the South-Western and South Wales Conciliation Board, the Bristol Association of Building Trade Employers, the National Federation of Building Trades' Operatives, and the National Board of Conciliation for the Building Trades. After a sitting of three hours, it was intimated that the decision of the Court would be reserved.

A Court of Arbitration, held at Glasgow on August 7, has issued its wages award concerning the Employers' Associations and building firms in Dumfries-shire, Kirkcudbrightshire and Wigtownshire, and the Building Trades of Scotland Operatives' Wages and Conditions of Service Board. The claim was for a standard rate of 1s. 8d. per hour for masons, joiners, plasterers and slaters; 1s. 4d. per hour for labourers; and a 44-hour working week for all grades, being five days of eight hours per day and four hours on Saturday; these alterations to take effect from April 1, 1919. It was contended, by the representatives of the workpeople, that the awards of the Court of Arbitration relating to the Scottish building trade had been given effect throughout Scotland with the exception of the districts under consideration. The contention of the employers was that the economic conditions in the three counties under consideration did not warrant payment of the rates claimed. The working hours in the three counties vary from 50 to 55, and the rates in the various towns are not uniform. The award of the Court is as follows: The men concerned employed in the Dumfries and Maxwelltown District shall receive such advance as shall bring their rates up to 1s. d. per hour. The remainder of the men concerned shall receive an advance of 6¾d. per hour over the rate payable in each district on August 4, 1914. The Court makes no order in respect of the weekly working hours of the employees concerned. The rates fixed are, therefore, based on the working hours at present worked in the various districts. This award shall not operate in cases where the rates paid are in excess of those otherwise due. The alterations effected by the award shall take effect from the beginning of the first pay period after August 1, 1919.

Andover.

A deputation, representing the National Federation of Building Trades' Operatives, appeared before the Court of Arbitration, last week, to contend whether its members in the Andover district should receive the same flat rate as those employed in the Southampton area. The Andover employers were also represented. The standard rate of wages in the Andover district required by the Federation for all mechanics is 1s. 5d. per hour and labourers 1s. 2d. per hour, with a 53-hour week. The Court reserved its award.

Dublin District.

The parties to reference were the Building Trade Operatives (Aerodromes) Dublin District, the Air Ministry, and the Amalgamated Society and General Union of Carpenters and Joiners and the Ancient Guild of Incorporated Brick and Stone Layers' Trade Union. The claim was for payment of the 12½ per cent. bonus on earnings at all aerodromes in the Dublin district. The matter was referred under the Conciliation Act, 1896, by the Ministry lof Labour to the Court of Arbitration for settement, and representatives of the parties were heard in Dublin on August 29, 1919. The men concerned received the bonus of 12½ per cent. on earnings until May 13, 1919, when such payment was stopped by order of the Air Ministry. The award of the Court is that the men concerned, aged 21 years and over, shall continue to receive the bonus of 12½ per cent. on earnings from and including May 14, 1919.

A GAS ECONOMY SCULLERY.

IT has been suggested that a few notes from an architect's point of view might be of interest to gas engineers, on the scope for gas in meeting the problems presented by the national housing programme. By the courtesy of a well-known firm of gas engineers, we have been able to ascertain how very far modern gas engineering is able to solve the difficulties that arise, with the result that we have prepared plans for the cottages of one scheme now going forward, providing for as full a use as possible of gas appliances. We think our title for the type, "Gas Economy Cottages," will be found justified, for not only do we see, in common with other architects, the saving to be effected in actual erection, but we have paid particular attention to the economy of time and labour in household management.

The type of cottage to be built, as required by the Ministry of Health, is a great advance on what has hitherto been provided for the people who will live in them. The danger is that, in the desire to have the luxuries of fires in all rooms, hot water supplied to sinks, and the hitherto unusual provision of upstairs baths, the labour of getting in fuel, lighting and clearing out fires, and cleaning rooms will be overlooked. In such houses, having no servants, this would mean the lack of use and, therefore, waste of the facilities provided. The increased cost of coal itself almost renders its reasonable use (except for miners) prohibitive. On the other hand, if no coal has to be bought, no storage has to be provided, while the chief cause of dirt and dust is at once removed.

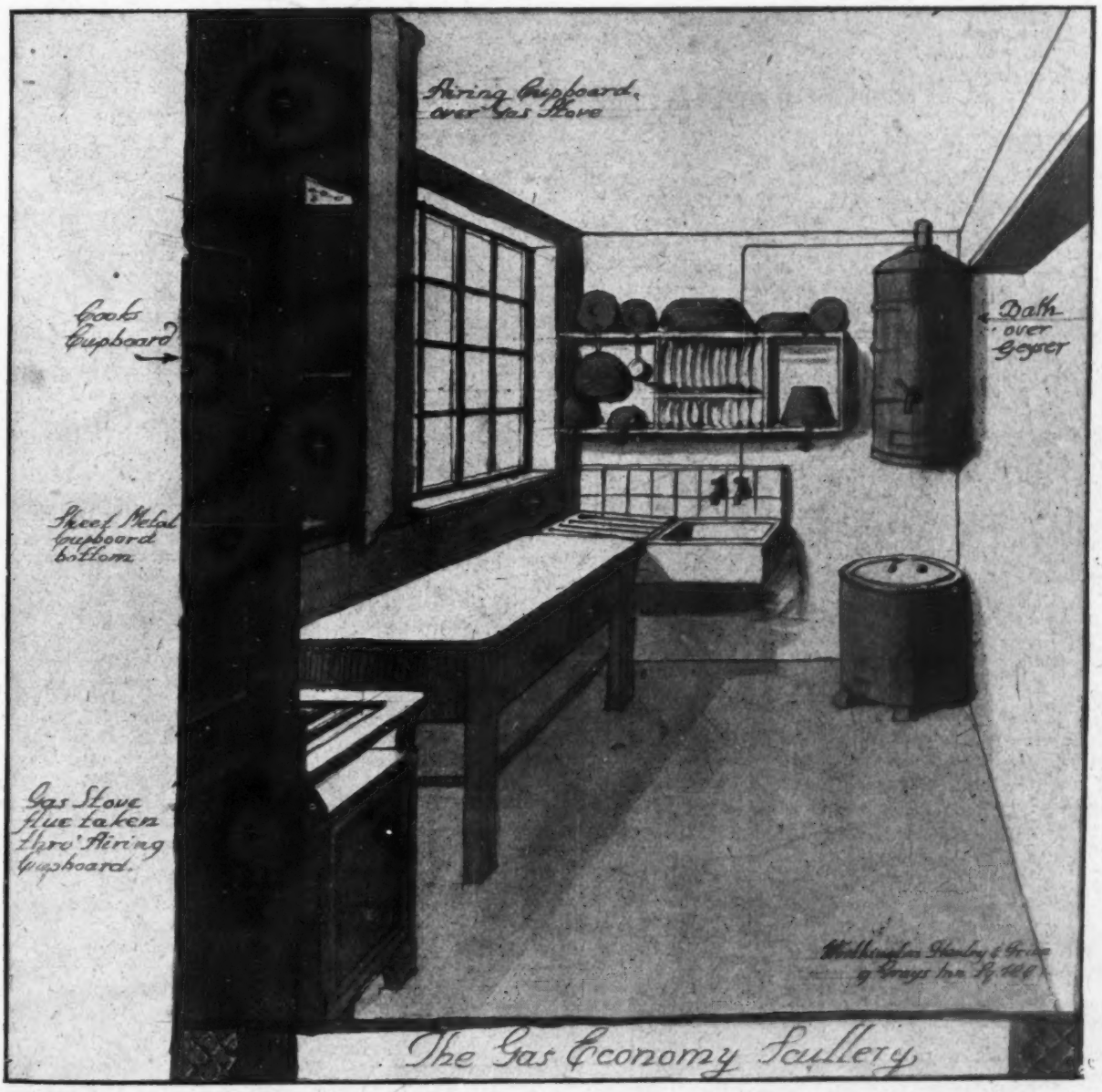
No time has to be wasted in laying and lighting fires, cleaning grates, sweeping flues, and no recurring expense is incurred by either landlord or tenant in repairing ranges, redecorating smoke-dirtied rooms, and the saving on all sides thus obtained is very considerable. We can claim some small experience of tenement property, and the frequent complaints he has heard of homes involving unnecessary daily house work have impressed us with the need of attention to this subject.

The accompanying sketch is an attempt to show how the scullery, the real heart of the house, can be arranged to save labour, and do far more than it is usually made to do. The geyser supplies hot water to bath and sink by the mere turning on of the respective taps, and the cost of fuel is limited to the duration of the flow of water. The gas cooker is conveniently placed between the table and the cook's cupboard, and the waste heat is utilised to warm the airing cupboard set above it. For this purpose the flue from the cooker passes through the height of the cupboard before reaching the open air, and a sheet metal plate forming the bottom of the cupboard absorbs further heat from the stove beneath. The gas copper, being much less bulky than the old type, is able to stand convenient to the sink, and without wasting the space below the geyser, and further allows the geyser to supply hot water straight into the copper, which suffices for most of the washing. The gas copper need only be lighted when actual boiling is required.

Gas fires is all rooms will enable invalids to have the benefit of fires without entailing increased labour for those attending on them, and the fitting of boiling rings on the stoves themselves allows hot food or fomentations to be provided in a way otherwise impossible.

WORTHINGTON, HEALEY & GRICE.

One of the chief features of the "Stimex" gas cookers and ranges (manufactured by the "Stimex" Gas Stove Co., Ltd., North-street, Clapham, S.W.) is that the bottom of the oven is entirely closed. The burners are placed in an independent chamber at the side, which obviates the necessity of having the bottom open in order to obtain a sufficient supply of air to ensure proper combustion. There are no burners in the oven itself, and no dust can be drawn up from the floor on to the food. A hot chamber, without burners, is provided for warming plates, &c. It is also fitted with an open gas fire, and is made with and without a boiler. The "Stimex" gas hot-water circulator consists of a central cylindrical boiler receiving direct heat from two atmospheric burners, placed immediately beneath. Saddling this central boiler, but at a sufficient distance to permit of the easy escape of the products of combustion, is a water-jacket, whilst other water jackets are super-imposed thereon. Cold water from the hot-water tank or cylinder enters the top water-jacket, which constitutes a feed water-heater, and then passes through, in turn, all the other water-jackets or feed water-heaters, extracting the heat from the waste gases escaping to the main flue.


Airing Cupboard over Gas Stove
Cooks Cupboard
Bath over Geyser
Sheet Metal Cupboard bottom
Gas Stove flue taken thro' Airing Cupboard.
Worthington Healey & Grice 19 Grays Inn Sq. WC1

The Gas Economy Scullery

AN INTERESTING HOSPITAL HEATING INSTALLATION.

THE authorities of Westminster Hospital, which is situated in Broad Sanctuary, London, S.W., first commenced to use gas for heating in 1906, one appliance then being fitted. The table set out below gives some indication of the growing satisfaction shown in connection therewith, for the constant increase in the number of gas fires installed during a period covering twelve years tells its own tale. The experiment—because it was undoubtedly an experiment at first—has culminated in the complete heating by gas of all the wards, out-patients and casualty departments, &c.

The extension of gas heating to the wards was decided upon in 1918, and the problem of how best to carry out the installation, including the provision of radiant heat, presented certain difficulties which had to be overcome. The wards are square in shape, and the coal fires with which they had hitherto been heated were situated on the inner wall, the other three walls mainly consisting of glass in the form of windows. This structural condition naturally did not offer the best facilities for obtaining the equable temperature of 60 deg.F. throughout the ward, which was stipulated as desirable, and, indeed, necessary.

If two gas fires of the pattern chosen (having sufficient capacity to heat a ward of the size to be dealt with to the desired temperature under suitable conditions) had been fitted against the coal grate in the usual way—flat along the face of the wall—most of the occupants of beds on this side of the ward would have had absolutely no view of the fires, and would, therefore, have been outside the range of direct radiant heat.

Radiant heat is a particularly important feature of a hospital ward. Satisfactory and equable heating to a desired temperature is, of course, obtainable by a central heating system (the ordinary *pros* and *cons* of which it is not necessary to discuss here), but on dull, cheerless, or perhaps foggy days, the patients, who, it must be borne in mind, have already sufficient difficulty in keeping bright and in bearing up under their physical troubles, must have everything provided which is calculated to cheer them up and to create as good a psychological effect as possible. Apart from its heating capabilities, the water, steam or gas-heated radiator has not the cheery effect that a glowing coal or gas fire has upon the mind, and, therefore, ultimately on the body. Here lies the importance of radiant heating in a hospital ward, and—in our climate—to a considerable degree in our homes also.

The illustration, which we give herewith by permission of the Hospital authorities, indicates the method adopted to carry out the principle involved. In each ward two gas fires, with 18 in. wide fire fronts were fitted at approximately right angles to each other, against a specially-constructed backing, which formed a sort of closed heat chamber, giving forth a certain amount of very low temperature convected heat to assist in raising the temperature of the ward. A gas-heated instrument steriliser is accommodated on this structure. The angle at which the stoves were arranged was determined by their position in relation to the back wall. When this was accurately defined, the whole of the ward was subjected to direct radiant heat, and the cheerful glow of the fires was visible to all the occupants of the beds.

The following is the table referred to above;—

Years.	Number of Gas Fires Fixed.
1906	1
1907	1
1909	6
1910	3
1911	1
1913	1
1915	8
1916	3
1918	51
Total gas fires now in use	75

Conversion of Houses into Flats.

The Ministry of Health has issued a "Manual" on the conversion of houses into flats, for the use of local authorities. We hope to deal with this fully in our next issue.

Gas Fires for Hospital Heating.

CONTINUOUS BEAMS IN FERRO-CONCRETE.

IN the course of an article in Vol. 10, No. 6, of the *Journal* of the Society of Engineers, on the design of continuous beams in ferro-concrete, Mr. H. Brodrick states that the subject is of considerable importance, as ferro-concrete specially adapts itself to this form of construction on account of its monolithic nature. The claim that continuous beams are economical in the amount of steel reinforcement used, is a doubtful one; the positive bending moment at the centre of the span is certainly reduced, but over the supports, and in many cases for the whole length of the beam, a negative moment has to be provided for which more than swallows up the saving effected. If the total bending moment diagram for a continuous beam considered for all conditions of loading is compared with that of the same beam where the continuity has been ignored, and each span considered as freely supported, it will be found that the total area of the former is considerably greater than that of the latter. This is due to the overlapping of the moment curves produced by the different conditions of loading. Further, the compressive stresses are transferred from the top of the beam, where they are satisfied by the concrete forming the floor slab, to the bottom, where the comparatively small area of concrete in the rib is quite inadequate to deal with them. Consequently, steel has to be added to the bottom of the beam to care for the compressive stresses. Thus, it would seem that certain "systems" in which the continuity is ignored, each span being considered as a freely-supported beam, aim mainly at reduction of cost. In these systems, the longitudinal reinforcement is stopped immediately above the supports, and it is argued that the beam being thus made intentionally weak at these points, the load will produce a positive moment only for the whole length of the span. In the initial stages of loading, however, this argument is not sound, for no matter how the beam is reinforced, if it is constructed continuously with the adjacent spans, there must be at the points of support tension at the top of the beam and compression at the bottom; in other words, the beam will act primarily as a continuous beam, the tensile stresses above the supports being carried by the concrete as the load is increased, the ultimate tensile strength of the concrete will be exceeded, and cracks will appear above the supports; the stresses will then readjust themselves, and the beam will act as it has been designed. While these tension cracks are merely evidence of the existence of the hinged joint at the support, which has been assumed, and are not to be regarded as a sign of weakness or inability on the part of the beam to carry the load it has been designed to take, they are, on the other hand, objectionable in appearance, and occurring as they do at or near the point where, in many cases, the column supporting the floor above takes bearing, they are likely to constitute a real constructional weakness; more especially as the transverse reinforcement of columns, owing to the difficulty of placing it, may be badly spaced, or even entirely omitted, for the depth of the beam. Another serious objection to this method is that the well-known tendency of a ferro-concrete structure to act as one unit when subjected to any unforeseen strain or shock—probably one of the most important advantages that can be claimed for this method of construction—is rendered to a great extent ineffective if a proper connection is not made between the different members of the structure.

Many diagrams and formulæ are given for the design of beams, and in conclusion the author urges that where all methods must be approximate, nothing seems to be gained by adopting an involved and expensive system of design if a simpler, though perhaps less theoretical method, is proved by experience to be satisfactory.

STANDARD SPECIFICATION FOR ROADS AND SEWERS.

The following specification for roads and sewers has been issued by the Ministry of Health for use by local authorities and public utility societies in connection with State-aided housing schemes under Part III of the Housing of the Working Classes Act, 1890. All schemes for the construction of roads and sewers which have not yet been approved should comply with this specification, which is drafted so as to cover various alternatives, and it should be adapted to suit the particular circumstances of each scheme. The Ministry will not be prepared to approve schemes which show deviations from the standard specification, except in so far as the Ministry agrees that they are rendered desirable by local circumstances and conditions. This specification is to be adapted to local conditions and to the requirements of particular works by alterations made in red ink and initialled by the engineer or surveyor. It is intended to apply only to residential roads on which heavy traffic is not anticipated. For roads carrying heavy traffic, a more substantial construction may be necessary.

SPECIFICATION of works to be executed and materials to be provided for the construction of roads and sewers.

This specification with the drawings numbered forms part of the Contract between and

PRELIMINARIES.

The work hereinafter specified is intended to include for all the general work preparatory to its execution; for the compliance by the contractor with all the conditions of the contract; for the plant, tools, sheds and all materials, including water, necessary for carrying out the works; for proper and sufficient protective works, including all necessary fencing, lighting and watching required for the safety of the public and the protection of the works; for obtaining licences, giving notices and paying fees; for fire, workmen's and other insurances; for the provision of messrooms for workmen; for the regular clearance of rubbish; and for all other matters necessary for the completion of the several works satisfactorily to the true intent and meaning of the drawings and this specification. A suitable office, with the necessary heating, lighting, furniture and sanitary accommodation, with proper attendance during the period of the work, is to be provided for the use of the engineer or surveyor and the clerk of works. Adequate latrine accommodation is to be provided and kept in a proper sanitary condition, and, wherever practicable, connected as soon as possible with the public sewer. Trapping and ventilation thereto are to be carried out to the satisfaction of the engineer or surveyor. The latrines are to be cleared away whenever necessary and all work disturbed by the erection of these conveniences is to be made good at the completion of the contract. All fences, paths, trees, shrubs, greens and other surfaces required to be maintained are to be protected and kept free from damage due to operations under the contract. The works are to be executed in such order of time and place as may from time to time be directed by the engineer or surveyor.

I.—MATERIALS.

1. *General.*—All materials and workmanship are to be of quality approved by the engineer or surveyor, and in accordance with the following descriptions:—

MATERIAL FOR FOUNDATIONS OF CARRIAGE-WAY.

2. *Hardcore.*—Hardcore as far as practicable is not to exceed half-brick size and may consist of—(*a*) quarry refuse reasonably free from all foreign matter; (*b*) slag; (*c*) brick rubbish consisting of hard, well-burnt, broken bricks, free from all foreign matter; (*d*) well-burnt refuse destructor clinker taken from the heap without screening and freed as far as practicable from waste metal; (*e*) or [Insert description of such other suitable material of like nature as may be obtainable locally].

MATERIAL FOR SURFACING OF CARRIAGE-WAY.

3. *Stone for Waterbound Macadam.*—All material is to comply with the British Standard Specification No. 63 for sizes of broken stone and chippings.

Road stone is to be [Insert granite, limestone, flint, slag, or other suitable material] obtained from [Insert name of quarry or other source of supply] and broken to [Insert gauge] gauge.

4. *Tar Macadam.*—The aggregate for tar macadam is to be composed of broken stone, or selected slag, and is to consist of 60 per cent. of 2 in. standard gauge, and 30 per cent. of 1½ in. standard gauge; 10 per cent. of ¼ to ½ in. size is to be used for filling interstices during rolling operations. In the case of two-coat work the sub-crust is to consist of 2 in. standard gauge stone, and the wearing surface 1½ in. standard gauge stone; 10 per cent. of ¾ in. to ½ in. size stone is to be used for filling the interstices during rolling operations. The stone used is to be thoroughly dried before being coated with tar. For making tar macadam, tar is to be used which complies with Road Board Specification Tar No. 1, or Road Board Specification Tar No. 2, as specified. If Tar No. 1 has been used for tarring the stone, care is to be taken, especially in hot weather, that the tarred material has been allowed to stand a sufficient length of time to allow the tarred surface of the stones to become partially hardened and in a tacky condition. If Tar No. 2 has been used for tarring the stone, the macadam is to be laid soon after being tarred, and the stone coated with such tar should preferably be laid when the road is quite dry and in warm sunny weather. The quantity of tar used to coat one ton of stone is to be from 9 to 15 gallons, varying according to the gauge of the stone, the grade of tar used, the method of mixing and other conditions.

MATERIAL FOR FOOTWAYS.

5. *Hardcore.*—Hardcore for the foundations of footways is to consist of hard, dry, fine broken material, such as (*a*) quarry refuse reasonably free from all foreign matter; (*b*) slag; (*c*) brick rubbish, consisting of hard, well-burnt broken bricks free from all foreign matter; (*d*) well-burnt refuse destructor clinker taken from the heap without screening and freed as far as practicable from waste metal; (*e*) or [Insert description of such other suitable material of like nature as may be obtainable locally].

6. *Natural Stone Flags.*—Natural stone flags for paving footways are to be [Insert description of stone and size not less than 2 in. thick] thick, obtained from [Insert name of quarry, or other source of supply], and free from laminations, windings, or hollows on the surface. No flag except closers shall be less than 4 square feet in superficial area. The flags, except where self faced, are to be finished to a properly-tooled or sawn face, and the edges of each flag are to be cut square with each other and square to the top surface, so as to form proper butt joints when laid.

7. *Artificial Stone Flags.*—Artificial stone flags for paving footways are to be [insert description of artificial stone to be used, and size not less than 2 in. thick] with sharp square edges, and of the following sizes, viz., 3 ft. 0 in. by 2 ft. 0 in.; 2 ft. 6 in. by 2 ft. 0 in.; and 2 ft. 0 in. by 2 ft. 0 in.

8. *Tar Paving.*—The aggregate for tar paving for footways is to consist of material such as limestone, ragstone, slag, properly burnt gravel, or other similar suitable material, and should, for one-coat work, be broken to 1½ in. standard gauge, with sufficient material of ¼in. gauge to fill the interstices during rolling operations. In the case of two-coat work the sub-crust is to consist of material not exceeding 1½ in. standard gauge and the wearing surface of material not exceeding 1 in. standard gauge; 10 per cent. of ¼ in. gauge is to be used for filling the interstices during the rolling operations. The stone used is to be thoroughly dried before being coated with tar. For making tar paving, tar is to be used which complies with Road Board Specification Tar No. 1, or Road Board Specification Tar No. 2, as specified. If tar No. 1 has been used for tarring the stone, care is to be taken, especially in hot weather, that the tarred material has been allowed to stand a sufficient length of time to allow the tarred surface of the stones to become partially hardened and in a tacky condition. If Tar No. 2 has been used for tarring the stone, the macadam is to be laid soon after being tarred, and the stone coated with such tar should preferably be laid when the road is quite dry and in warm sunny weather. The quantity of tar used to coat one ton of stone is to be from 9 to 15 gallons, varying according to the gauge of the stone, the grade of tar used, the method of mixing and other conditions.

9. *Gravel for Footways.*—Gravel for paving footways or verges is to be good binding gravel, free from loamy or foreign matter.

KERBS AND CHANNELS.

10. *Stone Kerbs.*—Kerbs where used are to be [insert granite, limestone, or other suitable material] free from shakes or other defects, obtained from [insert name of quarry or other source of supply]. The sizes are to be [insert sizes not exceeding 6 in. by 12 in. edge, or 9 in. by 8 in. flat, in lengths of not less than 3 ft. 0 in.] The ends are to be dressed so as to form proper butt joints, and the top side and outer edge are to be dressed throughout and the back edge to a depth of 3 in. The top surface is to be level and true to a straight edge, and the front and back faces are also to be true to a straight edge, or to the required radii; all ends and both front and back faces are to be square to the top, and the bases are to be of full thickness and not cut away.

11. *Artificial Kerbs.*—Artificial kerbs are to be [insert description of artificial kerb to be used], and of the following dimensions [insert sizes not less than 4 in. by 10 in. edge in lengths of not less than 3 ft 0 in.]

12. *Channels.*—Stone channels, where used, are to be of granite, or [insert description of stone] stone of the following dimensions [insert sizes not exceeding 12 in. by 6 in. flat, in lengths of not less than 3 ft. 0 in.] The ends are to be dressed so as to form proper butt joints, and the top surface and both sides are to be dressed throughout. The top surface is to be level and true to a straight edge, and the front and back faces are also to be true to a straight edge or to the required radii; all ends and both front and back faces are to be square to the top, and the bases are to be of full thickness and not cut away.

MISCELLANEOUS.

13. *Cement.*—All cement is to be fresh burnt Portland cement from approved manufacturers, and is to comply in all respects with the British Standard Specification No. 12 for Portland cement.

14. *Sand.*—All sand is to be clean, sharp, and free from all foreign matter.

15. *Cement Mortar and Grout.*—All cement mortar and grout, unless otherwise specified, is to be composed of sand and cement in the proportions by volume of five parts of sand to two parts of cement. The materials are to be thoroughly well mixed in both a dry and wet state until a proper consistency is obtained.

16. *Aggregate for Concrete.*—The aggregate for concrete is to consist of clean, sharp river or pit ballast, free from clay, loam, earthy or vegetable matter, and washed where necessary, and containing sufficient sand to completely fill the interstices. No stone is to exceed 2 in. gauge. Should the proportion of sand present in the material be insufficient, additional sand is to be added. Should there be too much sand present in the material, the excess is to be removed by screening. Alternatively, an aggregate may be used consisting of approved stone or hard well-burnt brick rubbish, or destructor clinker, no piece of which is to exceed 2 in. gauge, with sufficient sand added to completely fill the interstices.

17. *Concrete.*—All concrete, unless otherwise specified, is to be composed of aggregate and cement in the proportions by volume of 6 parts of aggregate to 1 part of cement. The materials are to be measured in proper boxes provided for the purpose, and turned over on wooden stages twice before and twice after wetting through a rose sprinkler, with a sufficient quantity of clean water, so that the whole shall be thoroughly well mixed and incorporated. No cement or concrete is to be allowed to commence to set before being placed in position. No concrete is to be laid during frost, and proper protection is to be provided against rain, frost, or excessive heat when necessary.

18. *Lime Mortar.*—All lime mortar is to be composed of blue lias lump lime and clean, sharp sand in the proportions by volume of 1 part of lime to 3 parts of sand.

19. *Bricks.*—All bricks, unless otherwise specified, are to be common bricks, well burnt, hard and truly shaped, and free from cracks, lumps of lime, flints, or other defects. Bricks for lining manholes are to be similar to the above in all respects, excepting that they are to be of an impervious nature.

20. *Salt-glazed Ware Pipes.*—All pipes for soil and surface water sewers or drains are to comply with the British Standard Specification No. 65 for salt-glazed ware pipes. Those for soil sewers or drains are to be British standard tested; those for surface water sewers or drains are to be British standard.

21. *Cast Iron Pipes.*—All cast iron spigot and socket pipes are to comply in all respects with the British Standard Specification No. 78 for cast iron pipes and special castings for water, gas, and sewage.

22. *Road Gullies.*—The road gullies are to be of salt-glazed ware and properly trapped.

23. *Manhole Covers, etc.*—The manhole covers and gully gratings are to be of cast iron of good tough, close grained, sound grey metal, free from all cracks, airholes, twists, porous places, fractures, distortions, or other defects.

II.—ROAD CONSTRUCTION.

24. *Stripping Turf.*—Where specified, the turf on the site of the roads is to be cut, stripped and stacked for relaying.

25. *Surface Soil.*—The vegetable earth or other surface soil is to be removed and deposited in separate heaps for use or disposal as may be directed.

26. *Excavation.*—The site of the carriageway, footways and margins is to be excavated or raised to the levels and formed to the widths and cross sections shown on the drawings. The formation surface is to be properly shaped, consolidated and regulated to an even and uniform surface parallel to the finished surface. All soft places are to be excavated and made good with suitable materials, thoroughly consolidated where necessary.

27. *Foundations of Carriage-ways.*—The foundations of carriage-ways are to be formed with a layer of hardcore as previously specified, spread evenly and uniformly upon the formation surface and well rolled until a hard compact surface is obtained, true in level and cross section, with all interstices properly filled. The thickness of the foundation after consolidation is to be [Insert thickness, in no case less than 6 in]. On wet sites or clay subsoil, and where the character of the ground requires, a layer of well-burnt furnace or destructor clinker is to be spread and rolled to a thickness of 3 in. to 6 in. before the foundation of the carriage-way is laid. Where temporary roads have not been formed, and the foundation of the carriageway has been laid prior to building operations, the contractor is to excavate where necessary and make good and consolidate all trenches and soft places, and re-form surface and supply necessary material to comply with the thicknesses and depths above specified.

SURFACING OF CARRIAGEWAYS.

28. *Waterbound Macadam.*—Upon the foundation previously specified a coating of the material previously specified for waterbound macadam is to be spread and rolled to a hard compact surface true in level and to a cross fall of 1 in 24. The thickness of the coating when consolidated is to be [Insert thickness, not less than 3 in. when the material is granite, or 4 in. if other materials are used].

29. *Rolling.*—The rolling is to be carried out by a roller weighing not less than 8 tons. The macadam is to be consolidated by starting the work at the sides and gradually working towards the centre. No water or binding is to be applied until dry rolling has been carried out to a sufficient extent to form a smooth, hard surface, with the correct cross fall, and with the stones well knit together. No spreading or rolling is to be carried out in frosty weather.

30. *Binding.*—The binding material is to be the best reasonably obtainable. It is to be either of the same material as the surface coating, or of granite, limestone, or slag chippings, or, failing these, suitable pit gravel, and no stone is to exceed ¾ in. size. The binding material is not to be applied until the stones have been tightly rolled as above described. It is then to be spread, watered, and swept over the surface during the final rolling operations, working it from the channels towards the centre so as to fill the interstices between the rolled stones. Care is to be taken not to use more binding material or water than is absolutely necessary to ensure proper consolidation.

31. *Surface Tarring.*—Where surface tarring is specified, the carriageway is to be allowed to thoroughly dry out before the tarring is executed. Tar is to be used which complies with Road Board Specification for Tar No. 1. Immediately on application, the liquid tar is to be brushed so far as is necessary to ensure regularity in the thickness of the coating. The quantity of tar is to be approximately one gallon to five superficial yards. Where specified, stone chippings, crushed gravel, coarse sand, or other material (free from dust), not larger than will pass through a ½ in. square mesh, is to be used for gritting.

32. *Tar Macadam.*—Upon the foundation previously specified, a coating of tar macadam is to be spread and rolled to a smooth surface. The thickness of the coating when consolidated is to be [Insert thickness, not less than 3 in. nor more than 4½ in]. For a greater thickness than 3 in. the material is to be applied in two coats. For one coat work the material as previously specified is to be spread, levelled, and rolled to a hard compact surface true in level and to a cross fall not exceeding 1 in 28. For two coat work the material is to be spread, levelled, and rolled separately in two layers, the materials comprising each layer being of the sizes previously specified. For both one and two coat work the ¾ in. to ½ in. material is to be used for filling the interstices in the finished surface, and it is to be applied during rolling operations. The rolling is to be carried out by a roller weighing not less than 8 tons, and the tar macadam is to be consolidated by starting the work at the sides and gradually working towards the centre. Less rolling is required than in the case of waterbound macadam, and care is to be taken not to over-roll.

33. *Sealing Coat.*—Where and at such times as are specified, a coating of tar is to be applied to the surface, not less than one gallon of tar being used for every six super yards of road surface. This tar is to comply with the provisions of Road Board Specification for Tar No. 1, and is to be poured or sprayed on the surface at a temperature of about 230 degrees Fahrenheit. Stone chippings, crushed gravel, coarse sand or other approved material (free from dust) not larger than will pass through a ½ in. square mesh is to be used for gritting.

CONSTRUCTION OF FOOTWAYS.

34. *Foundations of Footways.*—The foundations of the footways are to be formed with a layer of hardcore as previously specified, spread, and well rolled to a consolidated thickness of [Insert thickness, not exceeding 4 in.].

SURFACING OF FOOTWAYS.

35. *Natural or Artificial Stone.*—Upon the foundation previously specified, a strip is to be laid [Insert width] in width of natural or artificial stone flagging, properly bedded all over the surface on a layer of lime mortar, with square joints, well grouted with lime mortar, and finished to a true and even surface according to the lines and levels indicated on the drawings, and to a cross fall not exceeding ½ in. to 1 ft. 0 in. Where artificial stone paving is used of greater width than 3 ft. 0 in., it is to comprise 2 ft. 6 in. by 2 ft. 0 in. and 2 ft. 0 in. by 2 ft. 0 in. flags laid so as to break joint 6 in. transversely; 3 ft. 0 in. by 2 ft. 0 in. flags being cut for use as closers only.

36. *Tar Paving.*—Upon the foundations previously specified, a coating of tar paving is to be spread and rolled to a smooth surface. The thickness of the coating is to be 2 in. in the case of one coat work, and 3 in. in the case of two coat work. For one coat work the material as previously specified is to be spread and rolled to a hard compact surface true in level, and to a cross fall not exceeding ½ in. to 1 ft. 0 in. For two coat work the material is to be spread and rolled separately in two layers, the materials comprising each layer being of the sizes previously specified. For both one and two coat work the ½ in. material is to be used for filling the interstices in the finished surface, and is to be applied during the rolling operations. When the rolling has been completed the materials previously specified for gritting are to be thinly sprinkled over the surface.

37. *Gravel Footways and Verges.*—Upon the foundations previously specified, the gravel is to be spread, watered, and rolled to a consolidated thickness of 3 in., and finished to an even surface true in level and to a cross fall of not less than ¼ in. to 1 ft. 0 in.

38. *Grass Verges.*—The surface of the ground properly formed as specified is to be lightly forked over to a depth of 6 in., and upon the surface thus prepared turf is to be carefully laid, beaten, well watered, and rolled. Turf removed from the site of the roads and stacked as previously specified is to be used if in good condition.

39. *Rolling.*—Rolling for the purpose of consolidating the foundations and finished surface of the footpaths, and for consolidating the gravel and grass verges, is to be done with a hand roller weighing not less than 6 cwt., and as often as is necessary to ensure proper consolidation.

KERBING AND CHANNELLING.

40. *Kerbing.*—All kerbing is to be carefully and accurately laid so that it is true in alignment or to the required curves. The front face is to be vertical, and the top surface true to the required levels. The kerbing is to be firmly and evenly bedded on a layer of concrete or clean, sharp gravel or good, dry clinker, 6 in. in thickness, and the joints are to be neatly formed butt joints well grouted with cement mortar. The height of kerbing above the channel is in no case to be less than 3 in. or more than 7 in. The concrete foundation, if used, is to be laid 3 in. wider than the kerb, and in the case of edge kerb it is to be extended halfway up the back of the kerb.

41. *Channels.*—All channelling is to be carefully and accurately laid so that it is true in alignment or to the required curves. The top surface is to be true in cross section and to the required falls. The channelling is to be firmly and evenly bedded on a layer of 6 in. concrete 3 in. wider than the channel, or on clean, sharp gravel or good dry clinker 6 in. in thickness, and the joints well grouted with cement mortar.

42. *Jointing.*—All joints are to be neatly struck with a pointing of cement mortar, and any space between the back edge of the kerb and the edge of the paving is to be made good with cement mortar.

43. *Tar Macadam Channels.*—Where channels are required and stone channels are not specified, they may be formed of tar macadam laid to a consolidated thickness of not less than 4 in., and to a width of not less than 12 in.

III.—SEWERS (SOIL AND SURFACE WATER).

44. *Excavation.*—Except where headings are specified or permitted, the ground is to be excavated for the sewers, manholes, &c., in open trenches to the lines and depths indicated on the drawings. Great care is to be taken to excavate to such depths only as are requisite for correct and regular gradients, and any trench which may have been excavated to a greater depth than necessary is to be filled in to the required level with concrete. All trenches are to be at least 6 in. wider on each side than the external diameter of the pipe to be laid. Especial care is to be taken to provide an even bed for the barrel of the pipe, and where a concrete bed is not specified the floor of the trench is to be properly shaped under the sockets and barrels of the pipes.

45. *Shoring.*—During the progress of the work all excavations are to be securely shored, timbered, and propped up, and where buildings are adjacent thereto, all necessary steps are to be taken to prevent damage. All water and gas mains, lamp columns, service piping, or any other apparatus connected therewith, together with any walls, buildings, or other properties which may be disturbed or injured during the progress of the works, are to be raised, lowered, slung, protected, underbuilt, restored, or made good. If directed, the timber is to be left in the trenches or excavations.

46. *Timber left in.*—Any timber directed to be left in will be measured and paid for out of the provisional amount included for the purpose in the bill of quantities, and at the scheduled rates.

47. *Pumping.*—The trenches and excavations are at all times to be preserved and kept free from water during the progress of the works, by means of pumping or otherwise.

48. *Headings.*—Where sewers are to be laid in heading, the headings are to be driven through from shaft to shaft before the pipes are laid, and are to be of sufficient size to enable the sewer to be laid and the excavations to be properly refilled and rammed. They are to be run in perfect alignment both in direction and gradient, and are to be adequately timbered. Great care is to be exercised in filling in the headings after the sewer is laid, and the material is to be solidly packed in and well rammed, the timber being left in where required.

49. *Bad Foundations.*—If any portion of the bottom of the trench is unfit for the reception of the sewer, a good foundation is to be formed either with concrete or other material as may be directed. Such work will be measured and paid for as an extra.

50. *Removing Surplus.*—The excavated material is to be disposed of as directed on the site, and so as to cause the least possible inconvenience to the public. All surplus materials are to be removed from the works as and when directed.

51. *Materials of Site of Works.*—The earth, stone, clay, gravel, and sand, and all other materials and things excavated from the works, or existing on the site thereof, are to remain the property of the employer, and are to be at the disposal of the Contractor so far only as use can be made of them for the purposes of the contract, subject to the approval of the Engineer or Surveyor.

52. *Articles of Value Found in Excavation.*—All fossils, coins, or other articles of antiquity or value whatsoever, which may be found in carrying out the works, are to be immediately delivered into the custody of the Engineer or Surveyor by the person who shall discover them.

53. *Refilling.*—When a length of sewer has been completed in the manner hereinafter described, and approved, the trench is to be at once filled in. The best of the material taken out of the trench is to be used for this purpose. Where the pipe is not surrounded by concrete, the first layer of selected material free from large stones is to be carefully placed round the pipes, so as not to injure or displace them, well watered and trodden in to a depth of 9 in. over the pipes. The remainder of the filling is then to be punned in layers of not more than 6 in. with an iron punner, and, where necessary, sufficient water is to be used to consolidate the filling. The greatest care is to be taken to ensure the sides of the trench being perfectly solid, in order to relieve the pipes of the weight of the superincumbent material, and the top frame of timber is not to be removed until the lower part of the trench is thoroughly consolidated.

54. *Roads and Footpaths to be Made Good.*—When the sewers are laid in existing streets, the material forming the surface and foundations of the carriageway or footway is first to be removed, kept separate, and set aside in heaps for replacement when the trench is filled in. Any deficiency is to be made up, and the surface of all carriageways and footways disturbed by the execution of the works is to be made good to the same thickness, and of the same material, as the existing street. The additional material required for this purpose will be measured and paid for as an extra.

55. *Laying and Jointing Salt-Glazed Ware Pipes.*—All salt-glazed ware pipes are to be of the quality previously specified, and of the several dimensions indicated on the drawings. They are to be laid in the respective positions shown on the plan, and at the respective depths shown on the sections. The whole of the pipes used are to be examined by such person or persons as may be appointed for that purpose, and all pipes that are condemned are to be removed from the works forthwith. The sewers are to be made and left watertight, and no trench in which pipes have been laid, and the joints made, is to be filled in until the cement has set and until the length of sewer has been tested, if so required, and approved. All lengths of sewer are to be laid in perfectly straight lines between manholes. All necessary and proper bends, junctions, and reducing pieces are to be provided and fixed in place. All pipes are to be fitted together to ascertain the best alignment before being lowered into the trenches. Each pipe is to be laid in the trench singly, with the barrel and socket let into the shaping and recesses formed therefor, so that the pipes may have an even bearing throughout their length. The joints are to be carefully made by first inserting and caulking a double ring of tarred gaskin to prevent the mortar from entering the pipe, and afterwards filling with cement mortar (2 parts of sand to 1 part of cement), the joint being finished with a neat fillet bevelled off from the outer rim of the socket to the barrel of the inserted pipe. Care is to be taken that the inside of all pipes is left perfectly clean and free from obstructions of any kind.

56. *Patent Pipes.*—Where patent pipes are specified they are to be laid on the most approved method adopted by the firms supplying such pipes.

57. *Concrete Around Pipes.*—Where the nature of the ground requires, and in such positions as may be directed, salt-glazed ware pipe sewers are to be bedded on and haunched up with concrete, and where they are laid at a greater depth of cover than 12 feet, or a less depth of cover than 4 ft. 6 in. under carriageways, they are to be entirely surrounded with concrete. Where the pipes are bedded on concrete, the concrete is to be not less than 6 in. in thickness underneath and at the sides of the pipes, and the haunching is to be carried up to the centre of the pipe and bevelled off to the surface of the pipe. Where the pipes are entirely surrounded with concrete, the thickness of the concrete is to be not less than 6 in. measured from the outside of the pipe. The concrete is to be lowered into the trench in buckets or suitable troughing, and is not to be dropped on to the pipes from a height. It is then to be carefully filled in round the pipes and allowed sufficient time to set before the filling in of the trench is commenced.

58. *Laying and Jointing Cast Iron Pipes.*—Where required, cast iron pipes as previously specified, are to be carefully laid in the trenches and firmly bedded. Before being put in place or jointed up, they are to be carefully brushed out to remove soil or other matter which may have accumulated inside. All pipes are to be carefully driven home before the joint is made. The joint is to be made with strip lead, well driven home, so as to leave 2 in. depth of socket, properly run with molten lead and well caulked. Lead wool or ribbonite may be used for jointing in the following manner:—Only one turn of lead wool or ribbonite is to be put in at one time, and each layer is to be well caulked all around.

59. *Connections.*—Y Junctions for gully and house connections fitted where necessary with a proper stopper secured with weak lime mortar are to be inserted on the sewers (soil and surface water) in the positions shown on the drawings and elsewhere as directed. All junctions and connections are to be laid complete up to the gullies or forecourts prior to the construction of the road and their positions marked.

60. *Manholes.*—The manholes are to be built in the positions shown on the plans, and in accordance with the detail drawings. They are to be of 9 in. brickwork set in cement mortar upon concrete bases 9 in. in thickness. Where the depth to invert level does not exceed 6 ft. 0 in., the chamber is to be 3 ft. square inside in plan, and the brickwork is to be corbelled over to receive the cast iron cover frame, or brought up vertically to receive a 6 in. stone slab upon which the cast iron cover frame is to be set. The frames are to be bedded in cement on the brickwork or stone slab, and the covers left flush with the surface of the ground or roadway, as the case may be. Where the depth to invert level exceeds 6 ft. 0 in., the chamber is to be 4 ft. 6 in. by 3 ft. 0 in. inside, partly arched over with a brick 2-ring arch, and a shaft is to be carried up and corbelled over to receive the cast iron cover frame, which is to be bedded in cement. Salt-glazed half channel pipes of the required size and curves are to be laid and bedded in cement on the concrete base to the same lime and fall as the sewer, unless otherwise indicated on the drawings. Both sides of the channel pipes are to be benched up in concrete, and rendered in cement ½ in. in thickness, and formed to a slope of not less than 1 in 12 to the channel. The ends of all pipes are to be properly built-in and neatly finished off with cement mortar. When the diameter of the pipe is 9 in. or more, a 4½ in. ring arch is to be turned over the end. Where the depth of the invert exceeds 3 ft. 0 in. below the surface of the ground, galvanized wrought iron step irons of approved pattern are to be built in the brickwork every four courses, with such additional hand irons as may be necessary for safety. Alternatively, manholes may be constructed of precast concrete made in accordance with the detail drawings, and bedded on concrete 6 in. thick. The joints are to be made and neatly pointed with cement mortar. The manhole cover frames are to be bedded on a concrete bed ring to prevent the weight of cover bearing on the shaft. Galvanized wrought iron step irons are to be fixed into the tubbing during the process of manufacture.

61. *Road Gullies.*—Road gullies as previously described are to be fixed in the positions shown on the plan. They are to be set upon a concrete foundation 6 in. thick and surrounded with concrete 6 in. thick. Cast iron frames and grids, and, where necessary, overflow plates, of approved patterns, are to be set on concrete or brickwork above the gully, so that the grid finishes flush with the channel of the carriageway. 6 in. salt-glazed ware pipes connecting each gully to the sewer are to be laid and jointed in cement as previously specified.

62. *Sewer Ventilators.*—Sewer ventilators are to be provided at the heads of all sewers and elsewhere as directed. They are to be connected to manholes where possible, the connections consisting of salt-glazed ware pipes, not less than 6 in. in diameter, jointed with cement mortar and surrounded by concrete 6 in. thick. Where it is impracticable to connect to a manhole, a lamphole is to be constructed of salt-glazed ware pipes of the same diameter as the sewer, but not exceeding 12 in., rising vertically from a square

junction of the sewer. The junction pipe is to be bedded on concrete 12 in. thick throughout its length, and the pipes forming the lamphole shaft are to be surrounded with concrete 9 in. thick, and finished at the top with 3 course brickwork corbelled out to receive a cast iron cover and frame of approved pattern having a clear opening of not less than 11 in. The ventilating shaft is to be of cast iron not less than 6 in. diameter if circular, nor less than 6 in. by 4 in. if rectangular. A rust chamber is to be provided at the foot of the shaft. Wherever possible the shaft is to be attached to a building, and carried to a safe height above adjacent chimney pots or windows. Where a rectangular pipe is used, it is to be blocked out from the wall so as to give a space of at least 1½ in. between the shaft and the wall. In cases where it is impracticable to fix the shaft to a building, an independent column is to be erected on an approved site. The column is to be not less than 25 ft. 0 in. in height, with its base securely bedded in a block of concrete of the dimensions specified; a rust chamber is to be provided. In all cases a wire cage is to be fixed at the head of the ventilating shaft.

ACQUISITION OF LAND ACT.

In our issue of April 11 we summarised the provisions of the Bill to "Amend the Law as to the Assessment of Land acquired compulsorily for Public Purposes," as it was introduced to Parliament, and we now mainly purpose referring to the alterations introduced into the Bill in its passage through Parliament. It is now an Act, and came into force on September 1 last, with, however, the reservation that it is not to apply to the determination of any question "where before that date the appointment of an arbitration, valuation or other tribunal, has been completed or a jury has been empanelled." By Section 1, the Act is to apply where "by or under any Statute (whether passed before or after the passing of this Act) land is authorised to be acquired compulsorily by any Government Department or any local or public authority"; and by Section 12, Sub-section 2, "public authority" is defined as "any body of persons not trading for profit authorised by or under any Act to carry on a railway, canal, dock, water, or other public undertaking." The limitation, "not trading for profit," would seem to limit the public authorities to a very small class—for the undertakings mentioned are usually carried on for profit in some way. Under Section 7, it is provided that the provisions of this Act, in so far as they are inconsistent with the provisions contained in the Act or Order under which the land is authorised to be acquired, shall overrule the latter provisions, but here there is a saving clause to the effect that nothing in this Act relating to the rules for assessing compensation shall affect the provisions as to the assessment of land contained in Part 1 and Part 2 of the Housing of the Working Classes Act, 1890, or the Defence of the Realm (Acquisition of Land) Act, 1916, in so far as the provisions in those Acts are inconsistent with the rules under this Act; but it must be noted that this provision only applies to the rules contained in Section 2 of this Act and not to the tribunal, as it is provided that the provisions of the Second Schedule of the Housing of the Working Classes Act shall (except paragraphs 4, 5, 29 and 31) apply to an official arbitrator, who may exercise all the powers conferred by those provisions. Section 10 provides that this Act shall not apply to any purchase of the whole or any part of any statutory undertaking under any statutory provisions in that behalf prescribing the terms on which the purchase is to be effected; "statutory undertaking" meaning an undertaking established by Act of Parliament or Order having the force of an Act, and "statutory provisions" including an Order having the force of an Act.

We have so far only referred to the exceptions and exemptions, that an idea may be obtained of what the Act refers to before considering its provisions, and in this connection Section 8 must also be referred to, for it provides that nothing in this Act shall prevent the parties by agreement referring any question as to disputed compensation or apportionment of rent to the Commissioners of Inland Revenue, or to an agreed arbitrator; and this section contains new provisions regulating references to the Commissioners of Inland Revenue.

Having endeavoured to outline the application of the Act, we will now refer to the principal alterations effected in it since its introduction as a Bill. The Rules for the assessment of compensation are contained in Section 2. Rule 1 is as it stood in the Bill: "No allowance shall be made on account of the acquisition being compulsory." The first part of Rule 2 also stands as in the Bill: "The value of land shall, subject as hereinafter provided, be taken to be the amount which the land, if sold in the open market to a willing purchaser might be expected to realise," but a proviso has been added, "Provided always that the arbitrator shall be entitled to consider all returns and assessments of capital value for taxation made or acquiesced in by the claimant." This amendment seems to render the Act rather hard on the landowner, as, of course, it refers to the valuations made under the Finance Act, which were made in an unsatisfactory manner under an Act which has proved incomprehensible even to the Courts, and these valuations were acquiesced in by the landowners, sometimes because they were difficult to check and always because to challenge them threatened litigation which might be carried to the House of Lords. Rule 3, which provides that "The special suitability or adaptability of the land for any purpose shall not be taken into account if that purpose is a purpose to which it could be applied only in pursuance of statutory powers or for which there is no market, apart from the special needs of a particular purchaser or of any Government Department or any local or public authority," has had the following proviso in favour of the landowner added: "Provided that any *bona fide* offer for the purchase of the land made before the passing of this Act which may be brought to the notice of the arbitrator shall be taken into consideration." Rule 4, which prohibits any increase in the value of land which is due to an illegal use of it from being taken into consideration, stands as in the Bill; and Rule 5 is unchanged.

As regards the proceedings before the arbitrator, some important modifications have been introduced, and this was a part of the Bill we especially drew attention to as requiring modification. By Section 3 of the Act, as in the Bill, not more than one expert witness is to be allowed, unless the official arbitrator otherwise directs, but the following proviso has been added: "Provided that where the claim includes a claim for compensation in respect of minerals or disturbance of business as well as in respect of land, one additional expert witness on either side on the value of the minerals or as the case may be on the damage suffered by reason of the disturbance may be allowed," and it is especially to be observed that the provision contained in the Bill preventing parties appearing by counsel or a solicitor in any proceeding unless the arbitrator so directed, has been omitted altogether in the Act; but by Section 5, Sub-s. (4), it is provided that the arbitrator in exercising his general discretion as to costs may in any case disallow the cost of counsel.

The provisions as to costs have also been modified, and this again is a point to which we especially drew attention in the Bill. Under Section 5, where the acquiring authority has made an unconditional offer of compensation in writing and the award made by the arbitrator does not exceed that sum, the official arbitrator shall, unless for special reasons he thinks proper not to do so, order the claimant to bear his own costs and to pay the costs of the acquiring body so far as such costs were incurred after the offer was made. The words, "unless for special reasons he thinks proper not to do so," have been inserted in the Act, but besides this latitude allowed to the arbitrator a new clause (Sub-s. 3, Section 5) has been added, as follows, "Where a claimant has made an unconditional offer in writing to accept any sum as compensation . . . and the sum awarded is equal to or exceeds that sum the official arbitrator shall, unless for special reasons he thinks proper not to do so, order the acquiring authority to bear their own costs and to pay the costs of the claimant so far as such costs were incurred after the offer was made." This is only just, as applying the principle—what is sauce for the goose is sauce for the gander. These provisions as to offers and costs are by Section 5, Sub-s. 2, made subject to certain particulars of the claim having been supplied. The first part of this sub-section remains as it stood in the Bill, that if the arbitrator is satisfied that a claimant has failed to give the acquiring authority notice of the claim for compensation giving sufficient particulars and in sufficient time to enable a proper offer to be made by the acquiring authority, he may fix the time at which an unconditional offer is deemed to have been made. The sub-section then specifies the particulars that must be given as in the Bill, but a further provision has been added in the Act, that "when such a notice of claim has been delivered, the acquiring authority may at any time within six weeks after the delivery thereof withdraw any notice to treat which has been served on the claimant or upon any other person interested in the land authorised to be acquired, but shall be liable to pay compensation to any such claimant or other person for any loss or expenses occasioned by the notice to treat having been given to him and withdrawn, and the amount of such compensation shall, in default of agreement, be determined by an official arbitrator."

The above is not a complete survey of the whole of the Act, but as this Statute will very shortly make a great difference in the procedur where land is being acquired compulsorily, w have endeavoured to show the amendments that have been introduced since it was a Bill and briefly to explain its application.

OBITUARY.

The Late Mr. Horatio Walter Lonsdale.

In Mr. Lonsdale, who died on September 8, aged 75, art has lost a man of marked ability and wide attainments. He was articled to an architect, but turned aside to practice the "Arts accessory to Architecture."

Though his pursuits were many, probably the larger proportion of Mr. Lonsdale's time was devoted to stained glass. In conjunction with the late E. J. Tarver, he published a book on medieval costume, under the auspices of William Burges. He assisted the late Marquis of Bute in his heraldic studies of the armorial bearings of the Royal Burghs of Scotland, and designed the distinguished badge and chain worn by the Mayors of Holborn. He examined the students of South Kensington in mathematical problems, which Alexander Pope's indulgent critic would, in the case of most of us, "propose as things forgot." Pressed one day to take up the study of "Esperanto" as being so useful in travelling, he was at length driven to stop the enthusiast by telling him that he could already speak the language of every country that there was the least chance of his desiring to visit. He was a hard worker, a kind friend, a delightful companion, and, above all, modest, even to a fault.—

LACY W. RIDGE.

The Carpenters' Training Schools.

The 1919–1920 session of the Worshipful Company of Carpenters' Trades Training Schools opened on September 22 and will continue until April 30, 1920. The session is divided into three terms, and the fees are 5s. per term for adults and 3s. per term for apprentices. Particulars of the classes, which cover all branches of the building trade, may be obtained from the Director of the Schools, 153, Great Tichfield-street, W. 1. The object of the schools is to train those engaged in the building trade with a view to the improvement of technique, and to supplement, not supplant, workshop training.

THE BUILDING TRADE.

THE SIX-HOUR DAY.

By BENJAMIN I. GREENWOOD.

LORD LEVERHULME'S gospel of "The Six-hour Day" has probably contributed largely to the prevalent Labour unrest. If a shrewd and successful industrial magnate preaches "six hours," the operatives naturally feel virtuously justified in pressing for "eight hours" or a forty-four-hour week; and at the same time they become more or less surprised at their own moderation in offering to work 33⅓ per cent. longer than the renowned commercial expert prescribes. Nevertheless, "eight hours" would involve the gradual decline of British industry, and "six hours" would involve its rapid ruin.

What is the explanation? In the first place Lord Leverhulme's nostrum was never intended for general application, although it is popularly supposed to be so, and for this delusion Lord Leverhulme is partially responsible. Why does he allow his book, "The Six-hour Day" to be published at 12s. 6d. net, a price that he must know would effectually prevent it from reaching the hands of the operatives? It cannot be for the purpose of gain; but it is an obvious blunder. Surely Lord Leverhulme could have afforded to issue a popular edition at a cheap price, or even to have distributed it gratuitously; and in that case the mischief he has indirectly wrought might have been mitigated if not averted. Two quotations from the book itself will expose the widespread and popular delusion with regard to the "six-hour day," but this will not overtake the error:—"We must have a six-hour working day for men and women, and by means of six-hour shifts for men and women *we must work our machinery twelve, eighteen or twenty-four hours per day.* . . . But the adoption simultaneously, in all industries of the United Kingdom, of a six-hour working day is absolutely impossible and impracticable." The first twelve words are used for all (and more than all) they are worth by the industrial orator in advocating an eight-hour day; it is widely understood amongst the operatives that a great and successful employer of labour has deliberately urged the adoption of a six-hour day as being actually advantageous to employers! and consequently it can only be wilful and spiteful obstinacy on their part to oppose the demand for an eight-hour day or a forty-four-hour week. Lord Leverhulme may be unconscious of the evil he has innocently wrought, and although he might embarrass some of his critics by referring them to his book, it is obvious that in existing circumstances the book can never reach the localities where the trouble is still fermenting.

When an operative is working a machine and the joint production of the man and the machine is three or four times as much as the output of the man alone, then it is perfectly true that it would be practicable to double the working hours of the machine, even though this involved a reduction in the working hours of each man that operated the machine without any reduction in his earnings. If there were sufficient workmen available (at present there are not) then such a policy might be adopted in certain trades where the operatives are practically all employed on machines, for machinery knows no fatigue, it does not claim overtime rates, or indulge in sympathetic strikes, &c. (There would, however, be a difficulty in some industries where machinery is prevalent, for there are cases where the machine work is complicated rather than automatic, and, in such instances, the succession of foremen and operatives engaged upon particular operations might easily involve error in the work and the scrapping of valuable material upon which much labour had been spent). But, unfortunately, the various industries of the country cannot be carried on in water-tight compartments; the solidarity of labour is increasing: the effect of the notorious 12½ per cent. is an illustration of that tendency: It was granted to a certain section of the engineers, but it rapidly extended to practically all trades, and even found its way on to the pay-sheets of the building trade. If certain trades are to have a full day's pay for six hours' work, is it likely that other trades in the same locality are going to work contentedly for eight or nine hours for the full day's pay? A six-hour day in the trades that are numerically the greatest, such as building, agriculture, transport, &c., is admitted, even by Lord Leverhulme, to be "absolutely impossible and impracticable," and if he would take some steps to remove the pernicious but popular impression that his gospel of "the six-hour day" is generally applicable, he would be doing a public service.

A great deal of nonsense has been promulgated by theorists to the effect that (without machinery) the output from a six-hour day would not be less than from an eight or nine-hour day, on the assumption that fatigue would be avoided and the output per hour greatly increased in consequence. It is, of course, true that when the point of fatigue is reached the subsequent output per hour is reduced, but what is the point of fatigue? Unless the human race has deteriorated to an alarming degree during the past few years, it is absurd to suggest that even for hard manual labour a six-hour day (with an interval for food and rest) is necessary in order to avoid fatigue. No healthy man, if he was not out to avoid work, would confess that his output was influenced by fatigue if he did not work for more than four or four and a-half hours continuously in a nine-hour day. The talk of maintaining the full day's output with a reduction of hours (if the hours of the full day are not excessive) is either nonsense or else a condemnation of the working man; for to suggest that he could regularly produce his nine hours' output in six hours imputes deliberate dishonesty.

If Lord Leverhulme had followed his own prescription he would never have reached his present position, the "six-hour day" régime is not favourable to enterprise, either on the part of the operative or the employer, and any country adopting it would go under. It is mentioned incidentally in the preface of the book that "Lord Leverhulme prescribes a six-hour day, but he manages to work sixteen." Now, it would be quite interesting if one could ascertain whether, if Lord Leverhulme had reduced his working hours from sixteen to ten (not to mention six) per day he could have maintained his output. The fact of the matter is that there is a certain point where (on the average) the increase of working hours reduces the hourly output in consequence of fatigue of body through exertion, or fatigue of mind through brain work or even through monotony. When that point is ascertained, a certain deduction should be made to allow for the less robust, and one would thus arrive at an ideal standard of working hours, which would providentially accord with the standard of those who would arrive at their result by a different route, namely, by setting aside a reasonable proportion of the day for rest and recreation. Because it is better for humanity generally for a man to work nine hours than twelve hours per day, it might appear to follow mathematically that it would be better still for a man to work six hours instead of nine per day, or even four instead of six hours, "*quid est absurdum*," as Euclid would say.

There is a certain point where either the increase or the decrease of working hours would be prejudicial to the national welfare and to British industry generally. Where is that point? It would appear to be between eight and nine hours per day for five days and a-half out of the seven days in each week, with requisite intervals for rest and food. This would eliminate fatigue and also eliminate sloth or idleness; it should, in normal times, maintain the standard of industry that is essential to the commercial life of the nation, and simultaneously afford reasonable time for recreation and amusement or for study, which, through change of occupation, might be regarded as a form of recreation. But this will not overtake arrears. For the next two or three years the working hours in all trades should by mutual consent be increased above the normal by 10 or 15 per cent.; this would be an emergency remedy for a pressing and critical need, and incidentally provide the operatives with an increased income for the time being.

In any case, let it be clearly understood that the gospel of the "six-hour day," of which Lord Leverhulme is the accredited prophet, is merely intended to be a gospel for a privileged section of the industrial community; and if the industrial community in general, in its present disposition, refuses to confer upon any section any benefit or concession that cannot be extended to the whole (except in specially recognised cases, such as the miners), then the gospel of the six-hour day had better be abandoned until jealousy is eradicated from the industrial community, and that will not happen until it is eradicated from human nature.

It is very much to be regretted that Lord Leverhulme's book is inaccessible to the British workman by reason of its price, for, generally speaking, it contains a concentrated essence of sound common sense (which is quite an uncommon commodity); and if it could be circulated thoughout the industrial world it would be a great boon, provided that the strictly limited application of the six-hour day were still more prominently and emphatically indicated.

NOTES FROM THE FOREIGN PRESS.

These notes are taken from the Technical Supplement to the *Review of the Foreign Press*, formerly issued by the General Staff, War Office.

CONSTRUCTION OF SMALL HOUSES IN MASS CONCRETE.

The author points out that the proposal to build small houses of mass concrete is not new, as about a year before the war Edison endeavoured to bring the system into use. The method is simple, but the cost of the necessary standard centering is very high; however, this can be used a great many times. The objection to the sameness of the standard type of house in a settlement can be avoided to a considerable extent by suitable grouping. Some types of concrete houses are cold and disagreeable, and another objection is that if the concrete is made of gravel or broken stone, nails cannot be driven in. In hollow block construction these objections are obviated by the use of gravel aggregate for the outside only and breeze or cinder aggregate for the inside.

In Germany, certain firms are taking up the construction of mass concrete houses and using a special aggregate, of which the composition is not stated. It has a much lower conductivity for heat than gravel concrete, and although the strength is less, yet it is amply sufficient for the purpose. The Mannebach Co., of Berlin-Wilmersdorf, are using iron forms, while H. & M. Loesch, of Karlsruhe, use wooden forms composed of standard panels, which cost from £175 to £700, according to the size of the houses (*Deutsche Bauzeitung*, May 14).

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters	Masons' Labourers.	Bricklayers' Labourers	Plasterers' Labourers.
Aberdare	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Accrington	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½–1/3½	
Altrincham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Ashton-under-Lyne	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Barnsley	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Barrow-in-Furness	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Barry	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Bath	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	10	10	10
Bedford	1/1	1/2	1/2	1/1	1/8½	1/1	1/1	10	10	10
Birkenhead	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Birmingham	1/9½	1/9½	1/9½	1/9½	1/9½	1/8½	1/8½	1/6½	1/6½	1/6½
Bishop Auckland	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½	1/5½	1/5½
Blackburn	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½–1/3½	
Blackpool	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/7½		1/4½–1/4½	
Bolton	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/3½		
Bournemouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/8½	1/1½	1/1½	1/1½
Bradford	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Bridgwater	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/2½	1/2½	1/2½
Brighton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/4½	1/2½	1/2½	1/2½
Bristol	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½	1/5½	1/5½
Burnley	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½–1/3½	
Burton-on-Trent	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Bury	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Cambridge	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/1	11½	11½	11½
Cardiff	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Chatham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Cheltenham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/4½	1/4½	1/4½
Chester	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½–1/3½	
Chesterfield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Colchester	11	11½	11¼	1/-	11	1/-	9½	8½	8½	8½
Coventry	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½	1/5½	1/5½
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½		1/2½–1/2½	
Darlington	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½	1/5½	1/5½
Derby	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½	1/5½	1/5½
Doncaster	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Dudley	1/6½	1/6½	1/6½	1/6½	1/6½	1/3	1/1	1/3½	1/3½	1/3½
Durham	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½	1/5½	1/5½
East Glam. and Mon. Valleys	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Exeter	1/3	1/2	1/3	1/3	1/3	1/3	1/2	1/1	1/1	1/1
Folkestone	1/3½	1/3½	1/3½	1/3½	1/2½	1/3½	1/2½	1/-½	1/-½	1/-½
Gloucester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/3½	1/3½	1/3½
Grantham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3½	1/3½	1/3½
Grays	1/7½½	1/7½½	1/7½½	1/7½½	1/7½½	1/8½	1/8½	1/5½	1/5½	1/5½
Grimsby	1/8½	1/8½	1/8½	1/8½	1/8½	1/2½	1/1½½	11½	11½	11½
Great Yarmouth	1/2½	1/2½	1/2½	1/2½	1/2½	1/3½	1/2½	1/-½	1/-½	1/-½
Guildford	1/3½	1/3½	1/3½	1/3½	1/3½	1/8½	1/8½	1/5½	1/5½	1/5½
Halifax	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/7½	1/4½	1/4½	1/4½
Harrogate	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½½	1/5½½	1/5½½
Hartlepools	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/-½	1/-½	1/-½
Hastings	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/2½	1/2½	1/2½
Hereford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/5½	1/5½	1/5½
Huddersfield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Hull	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/1½	1/1½	1/1½
Ipswich	1/3½½	1/3½½	1/3½½	1/4½	1/4½	1/4½½	1/2½		1/3½–1/3½	
Lancaster	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	10½	10½	10½
Leamington Spa	11½	1/1½	1/1½	11½	11½	1/1½	1/0½	1/5½	1/5½	1/5½
Leeds	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/1½	1/1½	1/2
Leicester	1/4	1/4	1/4	1/4	1/4	1/4	1/2	10½	10	10½
Lincoln	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3		1/4½–1/4½	
Liverpool	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/4½½	1/4½½	1/4½½
Llanelly	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½	1/5½	1/5½
London	1/9½	1/9½	1/9½	1/9½	—	1/9½½	1/8½	1/5½	1/5½	1/5½
Loughborough	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/3½½	1/3½½	1/3½½
Luton	1/6½½	1/6½½	1/6½½	1/6½½	1/6½½	1/6½½	1/5½½	1/3½	1/3½	1/3½
Maidstone	1/6½	1/6½	1/6½	1/6½	1/6½	1/8½	1/8½		1/4½–1/4½	
Manchester	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/0½	1/0½	1/1
Mansfield	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/0½	1/0½	1/0½
Merthyr Tydfil	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½½	1/4½½	1/4½½
Middlesbrough	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/5½½	1/5½½	1/5½½
Newcastle-on-Tyne	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/5½½	1/5½½	1/5½½
Newport, Mon.	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½½	1/4½½	1/4½½
Northampton	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/0½	1/0½	1/0½
Norwich	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/0½	1/0½	1/0½
Nottingham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½½	1/5½½	1/6½
Oldham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Oxford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/4½	1/2½	1/2½	1/2½
Plymouth	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½	1/5½	1/5½
Pontypridd	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½½	1/4½½	1/4½½
Portsmouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Preston	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½–1/3½	
Reading	1/7½	1/6½	1/6½	1/6½½	1/7½	1/6½	1/4½½	1/3½	1/3½	1/3½
Rochdale	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Rochester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Rugby	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½½
St. Albans	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½½	1/3½½	1/3½½	1/3½½
St. Helen's	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Scarborough	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Sheffield	1/8½½	1/8½½	1/8½½	1/9½	1/9½	1/7½	1/7½	1/5½	1/5½	1/5½
Shrewsbury	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Southampton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Southend-on-Sea	10	10	10	10	Piecework	10	8	8	8	8
Southport	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½–1/3½	
South Shields	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/5½½	1/5½½	1/5½½
Stockport	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Stockton-on-Tees	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/5½½	1/5½½	1/5½½
Stoke-on-Trent	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2½½	1/2½½	1/2½½
Stroud	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½½	1/2½	1/2½	1/2½
Sunderland	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/9½½	1/5½½	1/5½½	1/5½½
Swansea	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½½	1/4½½	1/4½½
Taunton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/2½	1/2½	1/2½
Torquay	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/1½	1/1½	1/1½
Wakefield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Walsall	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½½
Warrington	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
West Bromwich	1/7½½	1/7½½	1/7½½	1/8½	1/8½	1/8½	1/8½	1/4½½	1/4½½	1/5½
Wigan	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½–1/4½	
Windsor	1/4	1/4	1/4	1/4	1/4	1/4	1/2½	1/0½	1/0½	1/0½
Wolverhampton	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½	1/4½	1/4½	1/4½
Worcester	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/1½½	1/1½½	1/1½½
York	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½

The Masons' rate given is for bankers: fixers usually ½d. per hour extra. * War bonus of 2s. per week granted. † War bonus of 3s. per week granted. ‡ War bonus of 3s. 6d. per week granted. ‡‡ War bonus of 5s. per week granted. ¶ War bonus of 7s. 6d. per week granted. § These rates include the 12½ per cent. bonus. [The above rates, unless otherwise shown, are exclusive of 12½ per cent. bonus.—ED.]

NEW COMPANIES.

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 and 117, Chancery Lane, W.C.2, from the documents available at the Companies Registry :—

JOHN E. NADIN & SON, LTD. (156,044). Registered June 13, 1919. To acquire and carry on the business of builders and contractors. Nominal capital, £5,000.

C. F. MUNDELL & Co., LTD. (156,086). Registered June 16, 1919. Tees Joinery Works, Marsh Road, Middlesbrough. To acquire and carry on the business of builders, joiners and cabinet makers. Nominal capital, £5,000.

RAMSAY (DECORATORS), LTD. (156,223). Registered June 19, 1919. 6, Temple Fortune Parade, Golders Green, N.W.4. To carry on the business of builders and decorators. Nominal capital, £500.

S. GOODALL & Co., LTD. (156,294). Registered June 20, 1919. To acquire and carry on the business of plumber, decorator and contractor. Nominal capital, £3,000.

THOMAS PETERS, LTD. (156,320). Registered June 21, 1919. To acquire and carry on the business of painters and decorators. Nominal capital, £3,000.

GEORGE MOON & Co., LTD. (156,367). Mark Lane, Station Buildings, Byward-street, E.C. Registered June 24, 1919. To carry on the business of timber merchants, &c. Nominal capital, £5,000.

GEO. PARKER & SONS, LTD. (156,406). Registered June 25, 1919. To carry on the business of builders and contractors. Nominal capital, £40,000.

ARTHUR R. MASON, LTD. (156,418). "Bodafon," Llanbedr, Merionethshire. Registered June 25, 1919. To carry on the business of slate quarrying, &c. Nominal capital, £2,000.

WILLESDEN BUILDING AND CONSTRUCTION Co., LTD. (156,458). Registered June 26, 1919. To carry on the business of builders and contractors. Nominal capital, £5,000.

RETTENDON ROOFING TILE WORKS, LTD. (156,475). Springfield-road, Chelmsford, Essex. Registered June 27, 1919. To carry on the business of manufacturers and sellers of bricks, tiles, drain and water pipes. Nominal capital, £1,000.

SHEET METAL AND GALVANISING Co., LTD. (156,476). 2a, Tyrell-street, Bradford. Registered June 27, 1919. To carry on the business as indicated by title. Nominal capital, £10,000.

RUSKIN WORKS, LTD. (156,498). Ruskin Works, Ruskin-avenue, Manor Park, Essex. Registered June 27, 1919. To carry on the business of general engineers and contractors, manufacturers and dealers in metal goods, &c. Nominal capital, £2,000.

JAMES RUDMAN, LTD., Cambrian Colour Works, River-street, Bristol. (156,625). Registered July 2, 1919. To carry on the business of paint, varnish and glue manufacturers and merchants. Nominal capital, £30,000.

GEORGE WIMPEY & Co., LTD., The Grove, Hammersmith, W. (156,617). Registered July 2, 1919. To carry on business of builders, masonry and general constructional contractors and hauliers, &c. Nominal capital, £10,000.

A. B. NORRIS, LTD., Court-street, Trowbridge. (156,815.) Registered July 8, 1919. To carry on business of contractors, &c. Nominal capital, £5,000

METROPOLITAN METAL CONSTRUCTION Co., LTD., 6, Lloyd's-avenue, E.C. 3. (156,837). Registered July 8, 1919. To carry on the business of metal, constructional and electrical engineers and builders. Nominal capital, £5,000.

MULLEN & LUMSDEN, LTD. (156,908). Registered July 10, 1919. To carry on business of builders and contractors. Nominal capital, £3,800.

E. B. REED & Co., LTD., 23–24, Imperial Buildings, Ludgate Circus, E.C. 4. (156,973). Registered July 12, 1919. To acquire and carry on the business of brickmakers and brickfield proprietors. Nominal capital, £15,000.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERDEEN.—Plans passed: Alterations to premises, 65, Union-street, for John Falconer & Co., per Messrs. Kelly & Nicol, architects; oven at Bridge-place, for J. & W. Bisset, Ltd., per Messrs. Wilson & Walker, architects; garage, 43, Queen's-road, for Mrs. Milne, per Mr. G. Bennett Mitchell, architect; offices and stores on the north side of Palmerston-place, for Sam. Isaacs, Ltd., per Messrs. Sutherland & George, architects; alterations to dwelling house, Tillydrone-road, for the Donside Paper Co., Ltd.; garage, Leadside-road, for John Strachan & Sons; garage and show room, Holburn-street, for G. & W. Cheyne, per Mr. W. E. Gauld, architect.

AYLESBURY.—Plans passed by T.C.: New operator's room, Market Theatre, for Aylesbury Market Theatre Co.; boiler house, Bicester-road, for Messrs. W. Cubitts; alterations and additions, to "Hop Pole" Inn, Bicester-road, for Aylesbury Brewery Co.; garage and stores, Buckingham-street, for Mr. E. W. Young; new roof and shop front, Cambridge-street, for Mr. W. A. Narbeth.

BATLEY.—The plans passed last week by the General Works Committee include an 80 ft. by 40 ft. brick warehouse of three storys in Jack-lane, Batley Carr, for J. Newsome & Sons, woollen manufacturers, whose premises some two years ago were partially destroyed by fire. Other plans approved comprise motor garages for Mr. Thompson, Halifax-road, and Mr. A. E. Golby, Deighton-lane, and a cold storage shed at Highfield Mills, Staincliffe, for Thomas Carr, Ltd.

BO'NESS.—The local authority have approved the lay-out and type plans under the new housing scheme for the burgh.

BRADFORD.—An enquiry has been held into the application of the Corporation to borrow £2,017, for the extension of the new sewer along Halifax-road.

BRIDGWATER.—Official approval has been given to the purchase of a site for a housing scheme. The T.C. has decided to proceed with the erection of 150 houses at once, and will eventually build 300.

BRIGHTON.—Extensive operations have been commenced in demolishing the block of large business premises opposite the Clock Tower, on the direct thoroughfare to the Central Railway Station, in order to make a site for the palatial entertainment house projected by an Anglo-American combine.

BRISTOL.—The T.C. has agreed to the purchase of fourteen plots of land with unfinished houses upon it, and eight vacant plots of land at Lena-street and Britannia-road, Easton, at a cost of £2,000.

CARLISLE.—The Ministry of Health has held an enquiry into the application of the Corporation to borrow £25,000 for the erection of new gas works.

CASTLEBAR.—The layout out of a racecourse with stands, offices, &c., is under consideration.

CITY OF LONDON.—The City Corporation has agreed to grant a site in front of the Royal Exchange for Sir Aston Webb's amended design for a memorial to London troops who fell in the war.

CORK.—The Corporation have approved of fourteen sites, containing about 64 acres, for the erection of working-class dwellings thereon, and they have authorised the city solicitor to take the necessary steps with the object of acquiring these sites. It was also decided to include the site of the existing cattle market, as the Corporation had obtained the sanction of the Corn Market Committee to their acquiring portion of the corn market as a site for a new well-equipped cattle market.

CROSTHWAITE.—The Carlisle Consistory Court has granted a faculty to the vicar and churchwardens to make various alterations at the parish church.

DUNBAR.—A plan has been prepared by Mr. R. M. Cameron, architect, Edinburgh, in connection with the Dunbar housing scheme for sixty houses to be erected in the Barrack Park. The houses will contain four to five rooms, gardens back and front, and ground is also to be retained for recreation purposes.

EAST STIRLINGSHIRE.—The Eastern District Committee has decided to make application for a loan of £450,000 for the erection of 600 houses.

FERMOY.—The R.D.C. have under consideration several water supply schemes which have been reported on by their engineer, Mr. W. F. Maye, C.E., including supplies for eight villages, the more important being Glanworth, Castletownroche, and Kilworth.

FOLKESTONE.—The T.C. has decided to erect two shelters under the Leas promenade at a cost of £4,700.

GRIMSBY.—At a special meeting of subscribers of the Grimsby District Hospital, the report of the Managing Committee as to the purchase of Nuns' Farm, covering an area of 22 acres, at a cost of £7,350, was adopted. Lord Yarborough has given £1,000 towards the cost. The purchase is in connection with the extension of the hospital as a war memorial.

GLASGOW.—The following linings have been granted at the Dean of Guild Court: H. Liansky, picture house proprietor, 75, North Woodside-road, picture house in Sawfield-place, Garscube-road; William Beardmore & Co., building for powdered fuel plant near Rigby-street; Millars, Ltd., to add to works at 771–847, Duke-street; D. Smith, iron merchant, 127, Helen-street, Govan, to erect buildings for works there; Alexander Kennedy & Sons, Ltd., Castlebank Dyeworks, buildings in Anniesland-road; J. Weston & Co., timber merchants, 107, Kelvinhaugh-street, timber storage shed; W. Cosh, 449, Rutherglen-road, football pavilion in Rosebery-street, Polmadie; the Corporation of Glasgow, clothing store in Auldhouse-road, Newlands.

HENLEY-ON-THAMES.—The T.C. have secured permission to purchase 13¼ acres of land at a cost of £3,400, on which it is proposed to erect 130 houses.

LAMBETH.—New factory, 40, Martell-road, for Mr. Burnard Geen; additions, 188, Acre-lane, for Mr. F. Day.

LEWISHAM.—Plans passed by B.C.:—Motor garage, Charlsey-road, for W. H. Blay, Ltd.; drainage "White Horse," for Mr. F. G. Newnham; drainage, 86, London-road, for Mr. J. A. Boughton; house, Burnt Ash Hill, for Mr. A. Durbin.

MANCHESTER.—The Education Committee has decided to go forward with a scheme for a new training college.

PAISLEY.—Among the plans passed by the Dean of Guild Court were those submitted on behalf of the Western Chemical Company, Bogston, Greenock, who purpose erecting new works and workmen's cottages at Laighpark, Renfrew-road. Additional facilities to those available at Greenock are required by the firm. The new works will occupy an area of from four to five acres, but only one cottage will be erected meantime. The Court also approved of plans submitted on behalf of Messrs. J. & P. Coats, Ltd., thread manufacturers, for the erection of additions to their No. 1 spinning mill at Fergulsie; Messrs. A. F. Craig & Co., Ltd., engineers, to convert part of their buildings into a power house and addition to their offices at M'Dowall-street; and the Seedhill Finishing Co., Ltd., to erect extensions to their finishing works at Ralston-street.

PORT-GLASGOW.—Plans of the proposed new housing schemes for Port-Glasgow have been under the consideration of the T.C. These provide for 3,000 cottages, capable of housing 15,000 persons. The area proposed to be included occupies a large part of land lying between Port-Glasgow and Kilmacolm. It is proposed meantime to proceed with only 1,000 cottages, and the cost for the first portion of the scheme is estimated at a little over one million sterling.

REDCAR.—The U.D.C. have appointed Messrs. D. Balfour & Son, of London and Newcastle-on-Tyne, engineers for their new scheme of main sewerage for the town and also for Warrenby and Dormanstown. The work will consist of sea outfalls with considerable lengths of main and branch sewers.

RUGBY.—The U.D.C. has decided to purchase 20 acres of building land at £400 per acre, 12 acres at £275 per acre, and about 1,200 square yards at an inclusive sum of £3,360, subject to the approval of the Ministry of Health.

TANDERAGEE (CO. ARMAGH).—The Urban Council have decided to prepare plans for the building of 30 houses in the district, and to submit the plans when ready to the L.G.B.

SOUTHEND-ON-SEA.—Plans passed by T.C.:—House, Imperial-avenue, for A. Winspear; additions, St. Saviours Hall, Chadwick-road, for Vicar and Churchwardens; bungalow, St. Clements-avenue, for E.S. Lloyd; two houses, Warwick-road, for J. E. Johns; alterations to Empire Theatre, Alexandra-street, for D. Morris and Partners; new w.c. and drainage, 14, Ditton Court-road, for Mrs. A. M. Bell; bungalow, First-avenue, for F. May; addition to garage, The Hollies, Canewdon-road, for Mr. Atwell; conversion of workshop into bungalow, Grange-road, for S. E. Mowbray; alterations, 61, Southchurch-road, for Peark's Dairies, Ltd.; bungalow, Southborough-drive, for F. Broughton & Son; conservatory, "Seascape," Grand-parade, for A. R. Peggs; bungalow, "Kingsway," for F. Broughton & Son; alterations and shop front, 141, Hamlet Court-road, for L. Wilkinson; bungalow, Lord Roberts-avenue, for Major Adamson; bungalow, Blenheim-crescent, for L. Hurst; addition to Christian Science hall, rear of 459, London-road, for S. E. Moss; cart shed, Bramksome-road, for J. Simpson; alterations to basement, York-road, for the Trustees, York-road Wesleyan Chapel; house and garage, Leighcliff-road, for H. Bridge; alterations, 141, High-street, for F. Squier; garages, rear of 11, Southchurch-road, for P. Raven; alterations, 1 Marine-parade, for P. Zanchi; store, rear of 426, Westborough-road, for C. J. How; alterations, 38, Ceylon-road, for Mr. Berkovsky; alterations, 13, Royal-terrace, for C. Mertens; conservatory, 11, Surbiton-road, for Mr. Brooks; alterations, 27, York-road, for J. Coyle; conservatory, 48, Elderton-road, for M. Zigmond; bungalow, Fleming-avenue, for A. Lindfield; house, First-avenue, for G. G. Harrop; garage, 25, Victoria-avenue, for J. Black; two bungalows, Macdonald-avenue, for Wells & Barham; bungalow, Vernon-road, for F. Gurnet; three bungalows, Elmsleigh-drive, for G. Wood; additions, 5, Palmeira-avenue, for Mr. James; alterations, 58, Avenue-road, for Wells & Barham; bungalow, Elmsleigh-drive, for W. Swires; three bungalows, Blenheim-crescent, for Upson & Bentley; bungalow, Station-road, Leigh-on-Sea, for L. Hurst; bungalow, Fleming-avenue, for J. Martin; two houses, Station-road, Leigh-on-Sea, for W. Beecroft; alterations and additions, Standard Printing Works, Clifftown-road, for J. H. Burrows & Sons; bungalow, Elmsleigh-drive, for L. Hurst; motor garage, 96, Leigh Hall-road, for J. C. Fish; twenty garages and store, Station-road, Thorpe Bay, for the Trustees Burges Estate; flats, Crowstone-road, for J. C. Gaillard; house, Colbert-avenue, for P. A. Knott; additions to St. Mary's Hall, North-street, for Rev. E. N. Gowing; alteration to bakery, 134, Broadway, Southend, for F. A. Donnithorne; alterations and additions, Milton-street, for Gadsdon & Sons.

STOKE NEWINGTON.—Drainage plans passed by B.C.:—At 5 and 6, Mason's-court, for Mr. W. H. Hunt; at 151, High-street, for Mr. J. D. Stewart; at 14 and 16, Mount Grove-road, for Mr. J. Abraham; at 93–103, Stoke Newington-road, for Messrs. S. Goodall & Son.

SWANSEA.—Plans passed by T.C.:—Garage, Vivian-road, Sketty, for G. R. Thomas; alterations and additions, Brynsifi, Gower-road, Sketty, for J. P. Giles; additions, 75 and 76, Woodfield-street, for Aubrey Jenkins; additions, 7, Bartley-terrace, Plasmarl, for Daniel Davies; additions, 5 and 6, Union-street, for Jno. Richards, Ltd.; additions, 33, Sidney-street, Brynhyfryd, for Jno. Davies; one house, Sidney-street, Brynhyfryd, for Jno. Davies; additions, Norton-road, West Cross, for W. G. Morris; garage, Pentrepoth-road, Morriston, for D. O. Bowen; workshop, Neath-road, Morriston, for J. G. Howells; alterations, Main-road, The Dunns, for Mr. Buckmaster; additions, 17, Norfolk-street, for E. J. Jeffries; store and coal house, Bryn-terrace, Mumbles, for J. H. Smoldon; lavatory accommodation, The Promenade, Mumbles, for Fulton & Co.

WALSALL.—The T.C. has resolved to make application for sanction to borrow £11,970 in connection with the erection of the new power station at Birchell.

WILLESDEN.—Plans approved: Alteration, 332, High-road, Willesden, for Mr. James Clements; motor house, Northumberland House, Stonebridge Park, by Mr. H. Shaw, for Mr. R. R. Wheatland; motor garage at rear of Nos. 15–15A, High-road, Kilburn, by Mr. G. A. Sexton, for Mr. B. Lawrence; additional lavatory accommodation, Villiers-road, by Mr. E. W. Crisp, for Messrs. Norton & Gregory; alterations, 2, Victoria Villas, Kilburn, by Mr. Charles Barker, for Mrs. Brown; alterations, 2, Willesden-lane, Kilburn, by Mr. G. A. Sexton, for Mr. E. Cook; extension of garage, Dial Manufacturing Shop, new stores and enamelling shop, extension at Central Works, Cricklewood, by and for Messrs. S. Smith & Sons, Ltd.; additions to Britannia Pencil Works, by Mr. S. A. S. Yeo, for Arthur Johnson & Co., Ltd.; alterations to No. 7, Brondesbury Park, by Mr. W. Chappell, for Mr. J. Glen; garage, 4, Mapesbury-road, by Mr. W. H. Holmes, for Mr. T. Ettlestein; alterations to "Ellerslie," Uffington-road, by Mr. H. Sydney Grainger, for Mr. T. Illingworth; chimney shaft and boiler house, Belton-road, by Messrs. Trant Brown & Brightiff, for H. & E. Kirby & Co.; new w.c. and coal house addition, 84, Walm-lane, by Mr. E. Howe, for Mr. A. C. Krause; store and workshop, 10A, Chambers-lane, Willesden Green by and for Messrs. Callow & Wright; petrol store, The Garage, Stud Farm, Shoot-up Hill, by Mr. J. W. Carruthers, for the Cricklewood Motor Haulage & Repair Co., Ltd.; new buildings and drainage, rear of No. 43, Craven Park, by Mr. F. C. Mosscrop Young, for Messrs. Welsh Pearson & Co., Ltd.; extension of factory, Kingsley Works and Grange-road, by Mr. Ernest Franck, for Addressograph, Ltd.; two dwelling houses, Burnley-road, by and for Messrs. Concrete Buildings, Ltd.; smoke hole for fish curing, No. 1,008, Harrow-road, by Mr. H. Shaw, for Mr. J. Simmons; attic rooms in roof, No. 37, Teignmouth-road, by Messrs. Trant Brown & Brightiff, for Messrs. J. T. Scott & Son; motor garage, Kandar, Dawlish-road, by Mr. W. L. Trant Brown, for Mr. H. B. Coates; test shop and men's lavatories, Edgware-road, by Messrs. A. Savill & Sons, for Messrs. Bentley & Bentley; alterations and additions, No. 57, Craven Park, Harlesden, by and for Dr. C. H. Auty; addition to factory, Litchfield gardens, by Mr. H. J. Wise, for the Williamson Kinematograph Co., Ltd.; addition to Engineering shop, Cricklewood Broadway, by Mr. J. Catton, for the Broadway Properties, Ltd.; extension to motor house, No. 65, St. Gabriel's-road, Cricklewood, by Mr. C. W. B. Simmonds, for Mr. J. Orton; additional lavatories, No. 9, Burnley-road, by Messrs. E. E. & A. Tee, for the Eagle Assurance Co., Ltd.; house, Sidworth-road, for Mr. C. W. B. Simmonds.

WILTON.—Plans have been passed for a house on the Hartsham site for Messrs. Carr, White & Co.—Mr. J. J. Davison, the architect, has submitted to the U.D.C. sketch plans for twelve houses.

FIRES.

COATBRIDGE.—Damage estimated at £4,000 has been done by fire to the sawmills of Messrs. Wood & Wilson.

HULL.—The brush factory of Mr. Stanley Pickering, in Wellington-street, has been practically gutted by fire.

JARROW.—Considerable damage was done by a fire which has occurred on the premises of Messrs. Palmer.

The Registration of Plumbers.

A meeting of the General Council for the Registration of Plumbers will be held at the Council Chamber of the Guildhall, on September 30, at 10.30 a.m., when a resolution, that the existing rules as to the examination of applicants for registration as plumbers be modified, will be considered. The modification is thought to be desirable owing to the abnormal conditions created by the war, and the Ministry of Health is to be asked to require that only properly-qualified plumbers be allowed to execute sanitary work.

COMPETITIONS, CONTRACTS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk (✱) are advertised in this number. Contracts iv; Competitions iv; Public Appointments lvi; Sales by Auction lx Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

BUILDING AND PAINTING.

SEPTEMBER 26.—**West Hartlepool.**—VERANDAHS. The Guardians of Hartlepool Union invite tenders for erection of verandahs at Howbeck Infirmary. Specification of Mr. J. G. Bell, Architect, Scarborough-street, West Hartlepool.

SEPTEMBER 27.—**Chapel-en-le-Frith.**—PAINTING.—The Guardians invite tenders for painting and renovating the inside and outside of the Poor-Law Institution buildings at Chapel-en-le-Frith. Specification of the Master of the Poor-Law Institution, Chapel-en-le-Frith.

SEPTEMBER 27.—**Lewisham.**—PAINTING.—The Guardians invite tenders for the painting, decorating, and general repairs of the workhouse and infirmary, together with paving and road repairs. Quantities of Mr. W. R. Owen, Clerk to the Guardians, Guardians' Offices, 394, High-street, Lewisham, S.E. 13. Deposit £5.

SEPTEMBER 27.—**Pontypool.**—HOUSES.—The Pontypool R.D.C. invite tenders for the erection of six houses in Llangibby Village. Quantities of Messrs. Lougher & Co., architects, Pontypool.

SEPTEMBER 29.—**Barnes.**—HOUSES.—The U.D.C invite tenders for the erection of houses as under:—(Contract No. 1) Limes-avenue, 12 houses of two types (2) Rosemary-lane, 16 houses of three types; (3) Kew Meadows Footpath, 14 houses of two types. Quantities of Mr. G. Bruce Tomes, Surveyor, The Council House, Mortlake, S.W. 14. Deposit £1 1s.

SEPTEMBER 29.—**Caerphilly.**—HOUSES.—The Caerphilly Urban District Council invite tenders for the erection of 20 houses at Taff's Well. Quantities of Mr. Sidney Williams, Architect, Wharton-street, Cardiff. Deposit £2 2s.

SEPTEMBER 29.—**Carlisle.**—ALTERATIONS.—The Corporation invite tenders for certain alterations to Nos. 3 & 4, George-street, in connection with the Maternity Hospital. Quantities of Mr. H. C. Marks, M.Inst.C.E., City Engineer, 36, Fisher-street, Carlisle.

SEPTEMBER 29.—**Deptford.**—CONVERSION.—Tenders are invited by the Borough Council for the conversion of two houses, Nos. 27 and 31, Wickham-road, into flats. Quantities of Mr. F. Wilkinson, Borough Engineer, Town Hall, New Cross-road, S.E. 14.

SEPTEMBER 29.—**Lowestoft.**—Tenders are invited for the erection of 22 cottages on Beccles-road, Lowestoft.

SEPTEMBER 29.—**Rhymney.**—PAINTING.—The Committee of the Rhymney Cottage Hospital invite tenders for painting and colouring of the Hospital (internal). Specifications of Mr. Evan Pugh, 5, Lady Tyler-terrace, Rhymney.

SEPTEMBER 29.—**Rothwell.**—HOUSES.—The Rothwell Urban District Council invite tenders for all combined trades required in the erection of eighty houses in their district. Quantities of Mr. Walter Dodgson, Clerk, Council Offices, Rothwell, Yorkshire. Deposit £1 1s.

SEPTEMBER 29.—**Stratford-upon-Avon.**—The Borough of Stratford-upon-Avon invite tenders for the following work:—(1) Erection and completion of 70 houses in the Evesham-road, in the said Borough; (2) the construction of roads and sewers in connection with the scheme.

SEPTEMBER 29.—**Tonypandy.**—ROOF.—The Hibernia Band Musical Institute, Tonypandy, invite tenders for the reconstruction of the flat roof over part of their premises in Kenry-street. Quantities of Mr. R. S. Griffiths, Architect, Tonypandy. Deposit £1 1s.

SEPTEMBER 30.—**Bradford.**—SCHOOL.—The Corporation invite tenders for the erection of a nursery school at Princeville Infants' School. Quantities of the City Architect, Town Hall, Bradford.

SEPTEMBER 30.—**East Ham.**—HOUSES.—The B.C. invite tenders for the erection of houses under the Housing, Town Planning, &c., Act, 1919. Quantities of the Borough Engineer, Town Hall, East Ham, E. 6.

SEPTEMBER 30.—**London.**—The Commissioners of H.M.O.W. invite tenders for the foundations, &c., for the New Sorting Office, Mount Pleasant, E.C.

SEPTEMBER 30.—**London.**—The East Ham Council invite tenders for the erection of houses under the Housing, Town Planning &c., Act, 1919.

SEPTEMBER 30.—**Lyme Regis.**—HOUSES.—The Town Council invite tenders for the erection of 10 workmen's dwellings. Specifications of Messrs. Symes and Madge, architects, Chard, or at the Office of the Borough Surveyor, Lyme Regis. Deposit £1 1s.

SEPTEMBER 30.—**Mitcham.**—ALTERATIONS.—The U.D.C. invite tenders for alterations, &c., required at "Woodlands," Devonshire-road, to adapt the premises for use as a creche, &c. Specification of the surveyor, Offices of the U.D.C., The Broadway, Lower Mitcham.

SEPTEMBER 30.—**Newcastle-on-Tyne.**—PAINTING, &C.—The Guardians of Castle Ward Union Workhouse, Ponteland, invite tenders (1) for whitewashing the ceilings, distempering the walls, and painting the inside woodwork of their cottage homes, and (2) for painting the outside wood and iron work of such homes. Particulars of Mr. James Halliday, Workhouse Master, Ponteland.

SEPTEMBER 30.—**Newton-in-Makerfield.**—HOUSE.—The U.D.C. invite tenders for the erection of a house at their new gas works, Wargrave-road, Earlestown. Quantities from Mr. J. Elston, architect to the Council, Market Chambers, Earlestown. Deposit £1.

SEPTEMBER 30.—**Southgate.**—HOUSES.—The U.D.C invite tenders for the erection of ninety-two houses, Highfield-road, Winchmore-hill. Quantities of the surveyor, Council Offices, Palmers-green, N. 13.

SEPTEMBER 30.—**Whitwood.**—Various Works.—The West Riding Education Committee invite whole or separate tenders for the following works:—Whitwood Mere Council School, proposed teachers' room and w.c.; also improvement to the ventilation of the class-rooms. Quantities of the West Riding Architect, County Hall, Wakefield. Deposit £1.

OCTOBER 1.—**Bootle.**—HOUSES.—The Corporation invite tenders for the erection of: 8 houses, in blocks of 4 (Contract No. 3); 12 houses, in blocks of 4 (Contract No. 4); 10 houses, in pairs (Contract No. 5); 4 houses, in pairs (Contract No. 6). In Park-lane, Orrell. Quantities of Mr. J. Spencer Tumilty, Town Clerk, Town Hall, Bootle. Deposit, £2 2s. each set of quantities.

OCTOBER 1.—**Edinburgh.**—KITCHEN, &C.—The Governors of George Heriot's Trust invite tenders for the erection of new kitchen and dining accommodation and staff room at George Heriot's School. Specifications of Mr. John Anderson, F.S.I., Superintendent of Works, 20, York-place, Edinburgh.

OCTOBER 1.—**London.**—The Guardians of Wandsworth Union invite tenders for painting works, &c. (*a*) at the Infirmary, St. John's-hill; (*b*) at the Intermediate Schools, Swaffield-road.

OCTOBER 1.—**Orsett.**—HOUSES.—The R.D.C. invite tenders for the erection of 32 houses at Little Thurrock, near Grays, Essex. Quantities of Mr. James Beck, Clerk to the Council, 2, Orsett-road, Grays. Deposit £3.

OCTOBER 1.—**Rugby.**—HOUSING.—The U.D.C. invite tenders for the erection of 76 houses on the Rugby Fields Farm. Quantities of Mr. J. H. Sharp, Surveyor, Beur's Building, Rugby. Deposit, £2.

OCTOBER 1.—**Shoreditch.**—PAINTING, REPAIRS, &C. The Guardians of the Poor of the parish of St. Leonard, Shoreditch, invite tenders for external painting, pointing, and repairs to the whole of the Kingsland-road house and infirmary buildings, nurses' home, mortuary, &c., in the Kingsland-road, E., and Hoxton-street, N., and the casual wards in Reeves-place, N. Quantities of the Guardians' Architect, Mr. F. Danby Smith, A.R.I.B.A., Parliament-mansions, Victoria-street, S.W. 1. Deposit £5.

OCTOBER 1.—**Wandsworth.**—CONVERSIONS.—The Borough Council invite tenders for the conversion into flats of the premises, Nos. 24 and 26, Macaulay-road, and 64, The Chase, Clapham. Specification from the Council's Architect, Mr. R. Thomas Grove, Lic.R.I.B.A., Lincluden, Beaumont-road, Wimbledon Park, S.W. 19.

OCTOBER 2.—**Lanchester.**—HOUSES, &C.—The Lanchester Rural District Council invite tenders for road making, sewering, &c., together with the erection of eight houses at Kitswell. Quantities at the Architect's Office, Council Offices, Lanchester. Deposit £1 1s.

OCTOBER 3.—**Hammersmith.**—POST OFFICE.—The Commissioners of His Majesty's Works, &c., invite tenders for the erection of a new branch post office at Hammersmith, W. 6. Quantities from the Director of Contracts, H.M. Office of Works, Storey's-gate, Westminster, S.W. Deposit £1 1s.

OCTOBER 3.—**Huddersfield.**—The Corporation invite tenders for the erection of a car depot at St. Thomas-road, Longroyd Bridge. Quantities of Mr. R. F. Campbell, Borough Engineer, 1, Peel-street, Huddersfield.

✱OCTOBER 3.—**London.**—The Commissioners of H.M.O.W. invite tenders for the erection of a New Branch Post Office at Hammersmith, W.6.

OCTOBER 4.—**Brierley Hill.**—HOUSING.—The Urban District Council invite tenders for the erection of 90 houses of various types (the whole or part) on the High Ercal site. Quantities of Mr. John Yorke, surveyor, Town Hall, Brierley-hill. Deposit £10 10s.

OCTOBER 4.—**Darlington.**—ALTERATIONS.—Tenders are invited for alterations to the Rise Carr Hotel, Darlington. Specifications of Mr. T. H. Murray, Architect, Consett.

OCTOBER 6.—**Bolton-on-Dearne.**—PLUMBER AND GLAZIER WORK.—The U.D.C. invite tenders for the plumber and glazier work in connection with the erection of 142 dwelling houses and 4 shops at Goldthorpe, and 58 dwelling houses and 3 shops at Bolton-upon-Dearne. Quantities of the Architects, Messrs. Garside & Pennington, Ropergate, Pontefract. Deposit £2 2s.

✱OCTOBER 6.—**London, E.**—The London County Council invite tenders for the supply and erection of oak wrought framed, moulded and braced carriage and foot gates to the Royal entrance at Victoria Park, E.

✱OCTOBER 6.—**Newport (Mon.)**—The Housing Committee of the Newport Corporation invite tenders for the erection of the first 100 houses on the Somerton Estate.

OCTOBER 6.—**Romford.**—ALTERATIONS, &C.—The Essex County Council invite tenders for carrying out alterations and additions to the Romford Police Station. Quantities of Mr. G. Topham Forrest, county architect, County Architect's Office, Chelmsford. Deposit £2 2s.

OCTOBER 6.—**Thurnscoe.**—HOUSES.—The Thurnscoe Urban District Council invite tenders for the erection of 22 dwelling houses (Type No. 1) part of a scheme for the provision of 200 dwelling houses in Back-lane, Thurnscoe. Quantities from the Architect, Mr. Thomas Bull, M.I.M. and C.E., Parish Hall, Thurnscoe East. Deposit £2 2s.

✱OCTOBER 6.—**Watford.**—The Watford U.D.C. invite tenders for the erection of 40 cottages on the Willow-lane Estate, Watford.

✱OCTOBER 6.—**Watford.**—The Watford U.D.C. invite tenders for the erection of 40 cottages on the Harebreaks Estate, Watford.

OCTOBER 6.—**Westhoughton.**—HOUSES.—The Westhoughton Urban District Council invite tenders for five pairs of Type B houses, as a commencement of the Hindley's Estate Housing Scheme for 250 houses. Quantities of the Architect, Mr. G. E. Tonge, L.R.I.B.A. 371, Lord-street, Southport, or from Mr. G. Hayes, Surveyor to the Council, Town Hall, Westhoughton. Deposit £2 2s.

OCTOBER 7.—**Hunslet.**—PAINTING.—The Guardians of Hunslet invite tenders for painting required at their children's homes at Rothwell, Haigh. Specification of Mr. Fred. W. Mee, Clerk to the Guardians, Union Offices, Hunslet, Leeds.

OCTOBER 7.—**Leicester.**—The Estates Committee of the Corporation of Leicester invite tenders for the erection of the first portion of the Coleman-road Housing Scheme consisting of 120 houses.

✱OCTOBER 8.—**Ilford.**—The Ilford Urban District Council invite tenders for the erection and completion of eighty-six houses, and the formation of a length of road and surface water sewer at Tomswood Hill, Barkingside.

OCTOBER 10.—**Chelmsford.**—HOUSES.—The Council invite tenders for the erection of 12 houses on part of the Boarded Barns Estate, Chelmsford. Quantities of the Borough Engineer (Mr. Pecival T. Harrison, A.M. Inst.C.E.), Municipal Offices, Chelmsford. **Deposit, £1 1s.**

✱OCTOBER 10.—**Harrow-on-the-Hill.**—The Harrow-on-the-Hill Urban District Council invite tenders for the erection of twenty cottages of four different types in Bessborough-road, Harrow.

OCTOBER 14.—**Farnham.**—The Farnham U.D.C. invite tenders for (1) Thirty-four houses by four separate tenders in three groups of eight houses and one of ten houses; (2) Roads, sewers, footpaths, surface water drains, &c.; (3) Fences; (4) Planting hedges, trees, shrubs, &c., preparing for sowing verges and an open space.

OCTOBER 14.—**Rothwell.**—CINEMA.—The Rothwell Public Service, Ltd., invite tenders for the erection of a cinema hall in Ingram-parade, Rothwell. Quantities of the Architect, Mr. E. Schofield, Leventhorpe House, Woodlesford, near Leeds. Deposit £1.

OCTOBER 15.—**Chepstow.**—The Chepstow R.D.C. invite tenders for the erection of the first twenty houses of the Roggiett Scheme, near Severn Tunnel Junction Station.

✱OCTOBER 16.—**Biggleswade.**—The Biggleswade Rural District Council invite tenders for the erection of 179 houses in the following adjoining parishes: Langford, 42 houses; Clifton, 32; Arlesey, 44; Stotfold, 61.

✱NO DATE.—**Abercarn (Mon.).**—The U.D.C. invite tenders for (1) Construction of roads, footpaths, sewers, &c., and the erection of 50 stone-built houses at Llanfach (Abercarn); and (2) construction of roads, footpaths, sewers, &c., and the erection of 62 stone-built houses at Top Flats (Newbridge).

NO DATE.—**Ashington.**—HOUSES.—Tenders are invited for building four-roomed houses with bathroom, &c., at Ashington, Northumberland. Specifications at the Colliery Office, Ashington.

NO DATE.—**Ashwell.**—The Ashwell R.D.C. invite tenders for the erection of dwellings for the working classes in several parishes.

✱NO DATE.—**New Barnet.**—HOUSES.—The East Barnet Valley U.D.C. invite tenders for the erection of 56 houses in East Barnet-road and Long-street, New Barnet, being the first portion of the total scheme consisting of 162 houses.

NO DATE.—**Birmingham.**—PAINTING.—Tenders are invited for the external painting of 200 wooden bungalows. Quantities of Mr. J. W. Wilson, Longbridge Estate Office, Birmingham.

✱NO DATE.—**Dudley.**—The Corporation of Dudley invite tenders for the erection of 54 houses, or less, on the Red-hill Site.

NO DATE.—**Evesham.**—HOUSES.—The R.D.C. invite tenders for the erection of twenty-four cottages at Badsey and sixteen cottages at South Littleton. Quantities of Mr. R. J. Atkinson, Architect, Union Offices, Evesham. Deposit, £2 2s.

NO DATE.—**Howdon-on-Tyne.**—Tenders are invited for the painting and whitewashing the outside of Shipwright's Buildings, Howdon-on-Tyne. Particulars of Mr. J. E. Hayhoe, 54, Gallant-terrace, Howdon.

NO DATE.—**Hucknall.**—Tenders are invited for the erection of a bakery at Hucknall. Qunatities of J. C. Howitt, Secretary, Hucknall Torkard Industrial Provident Society, Ltd., Hucknall. Deposit, £2 2s.

NO DATE.—**Hull.**—BUILDING.—Tenders are invited for the erection of a two-storey building, about 100 ft. × 60 ft., Sculcoates-lane, Hull, for Messrs. Blundell, Spence & Co., Ltd. Quantities of Messrs. B. S. Jacobs & Snowden, Green Ginger, Hull.

NO DATE.—**Ipswich.**—The County Borough of Ipswich invite tenders for the erection of 18 houses upon the Hadleigh-road site.

NO DATE.—**Kirkcaldy.**—FACTORY.—Tenders are invited for the excavation of brick and concrete works, iron and steel works, carpenter and joiner and glazier works, plumber work and painting work, in connection with the erection of a factory at Wemyss Station, for the British Patent Fuels, Ltd. Quantities of Mr. W. Williamson, Royal Bank Buildings, Kirkcaldy.

✱OCTOBER 20.—**Richmond (Surrey).**—The Commissioners of His Majesty's Works, Storey's Gate, Westminster, S.W. 1, are prepared to receive tenders for the extension of Richmond (Surrey) Post Office; also for the extension of Weybridge Post Office. (Separate tenders for each.)

✱NO DATE.—**Leamington.**—The Borough of Royal Leamington Spa invite tenders for the erection of 166 houses on two sites in the Borough.

NO DATE.—**Meathop, Grange-over-Sands.**—Tenders are invited for the various works required in building a small hospital block at the Westmoreland Sanatorium, Meathop, Grange-over-Sands. Quantities of Mr. John Hutton, Architect, Meathop, Grange-over-Sands.

NO DATE.—**Melton.**—RE-ERECTION.—The Humber Portland Cement Co., Ltd., invite tenders for taking down, removal, and re-erection at the Company's Works, at Melton, near Hull, of one three-bay steel construction building. Particulars of the Company's Engineers, Maxted & Knott, Ltd., Burnett-avenue, Hull.

✱NO DATE.—**Newcastle-upon-Tyne.**—HOUSES.—The Corporation invite tenders for the erection of 100 houses on the Walker Estate.

NO DATE.—**Nottingham.**—HOUSES.—The Housing Committee of the Corporation invite tenders for the erection of 56 houses on the Coppice-road site, Nottingham. Quantities &c., of the following architects:—Messrs. Brewill & Baily, 44, Parliament-street, Nottingham (in respect of 12 semi-detached houses). Mr. E. B. Hall, of 12, Victoria-street, Nottingham (in respect of 26 houses in pairs and blocks of four). Mr. W. H. Taylor, King-street, Nottingham (in respect of 18 houses in pairs and blocks of four). Deposit £1 1s.

NO DATE.—**St. Pancras.**—PAINTING.—The Borough Council invite tenders for painting, &c., work at the public baths (inside and outside work), situate at Prince of Wales-road, King-street, and Whitfield-street. Application to the Borough Engineer, Town Hall, Pancras-road, N.W. 1.

NO DATE.—**Ruislip.**—COTTAGES.—The U.D.C. invite tenders for the erection of 34 cottages at Eastcote and 59 at Ruislip. Quantities of Mr. E. R. Abbott, Clerk, Council Offices, Northwood, Middlesex.

NO DATE.—**Stirling.**—HOUSES.—The Stirling County Council (Central District) invite contractors desirous of tendering for the Central District Housing schemes at Causeway-Head, Cambusbarron, Bannockburn, Plean, Bonnybridge, and Banton, to send in their names, stating for which districts they will be prepared to quote, to Mr. D. W. Glass, Housing Architect, 7, Gladstone-place, Stirling.

NO DATE.—**Tamworth.**—HOUSES.—The R.D.C. invite tenders for the erection of two or more houses up to forty on the Kettlebrook site. Quantities of Messrs. Newton & Cheatle, 39, Newhall-street, Birmingham.

✱NO DATE.—**Walsall.**—Walsall Munitions, Ltd., invite tenders for the demolition of a munitions factory at the rear of Hope Works, Pleck-road, Walsall, and the purchase and removal of material.

NO DATE.—**Wednesfield.**—COTTAGES.—The U.D.C. invite tenders for the erection of fifty cottages. Particulars of Messrs. Hickton & Farmer, architects, Walsall.

NO DATE.—**Yeovil.**—HOUSES.—The R.D.C. invite tenders for the erection of 12 houses at Montacute; 6 houses at Mudford; 10 houses at Norton-sub-Hampton; 16 houses (eight on each of two sites), at South Petherton. Forms of tender of Messrs. Petter & Warren, 74, Hendford, Yeovil.

FURNITURE, MATERIALS, etc.

SEPTEMBER 29.—**Billericay.**—ROAD MATERIALS.—The Billericay Rural District Council invite tenders for the supply of granite, Kentish rag, Kentish flint, gravel screenings, and sand, &c. Forms of tender from the surveyor, Mr. F. E. Ennals, Shelley-road Hutton.

✱SEPTEMBER 29.—**London.**—The Finsbury B.C. invite tenders for the purchase of about 250 tons of second-hand Welsh granite cubes.

OCTOBER 1.—**Haslemere.**—ROAD MATERIAL.—The U.D.C. invite tenders for the supply of broken stone and granite for one year. Forms of tender of Mr. G. W. J. Clark, Surveyor, Council Offices, Haslemere, Surrey.

OCTOBER 7.—**Southwark.**—CHAIRS.—The B.C. invites tenders for the supply of 500 chairs. Samples at Town Hall. Mr. F. H. Grey, Town Clerk, Town Hall, Walworth-road, S.E.

OCTOBER 10.—**Salford.**—SCHOOL DESKS.—The Education Committee invite tenders for school desks. Particulars of the Secretary, Education Offices, Salford.

NO DATE.—**West Ashford.**—GRANITE.—The R.D.C, invite tenders for the supply and delivery to railway stations of 1,000 tons of 1½-inch granite. Forms of tender of Mr. A. Sims, Surveyor to the Council, 17a, Bank-street, Ashford, Kent.

ENGINEERING, IRON AND STEEL.

SEPTEMBER 27.—**Dimmocks Cote.**—BRIDGE.—The Cambridgeshire County Council invite tenders for the erection of a new ferro-concrete bridge on the Hennebique system over the River Cam at Dimmocks Cote, in the parish of Wicken. Drawings of Mr. H. H. Dunn, County Hall, Cambridge.

OCTOBER 6.—**Lancashire**—BRIDGES.—The Lancashire County Council invite tenders for the following bridge works: Dovers (Hundred) Bridge, in the townships of Sefton and Maghull, entire reconstruction and widening; Cann (Hundred) Bridge, in the township of Walton-le-Dale, entire reconstruction and widening; Hareholme (County) Bridge, in the Borough of Rawtenstall, entire reconstruction and widening; Belmont (Hundred) Bridge, in the township of Belmont, roadworks and fencing for road widening. Quantities of Mr. W. Compton Hall, County Bridgemaster, County Offices, Preston.

OCTOBER 6.—**Weymouth.**—DAM.—The Corporation invite tenders for the construction of a dam and embankment road, together with the necessary sluices and tide flaps and other works, at the site of the present Blackwater Bridge. Quantities of the Engineer, Mr. H. W. Fitz Simons (Webster & Fitz Simons), 39, Victoria-street, Westminster. Deposit, £5 5s.

OCTOBER 7.—**Kingswear.**—RAILWAY WORKS.—The Directors of the Great Western Railway Co. invite tenders for a deviation of the Kingswear Branch Railway, near Kingswear Station—total length about 60 chains. Quantities of the Chief Engineer, Paddington Station, London.

ROAD, SANITARY, AND WATER WORKS.

SEPTEMBER 27.—**Menai Bridge.**—RESERVOIR.—The U.D.C. invite tenders for the construction of an open-air reservoir and providing and laying of cast-iron pipes, valves, &c., in connection with the water supply of Menai Bridge. Specifications of Mr. W. Owen, Council Offices, Dale-street, Menai Bridge.

SEPTEMBER 29.—**Caerphilly.**—ROADS, &C.—The Caerphilly Urban District Council invite tenders for the construtcion of roads and sewers in connection with the erection of 20 houses at Taff's Well. Plans at the Council Offices, Caerphilly. Deposit £1 1s.

SEPTEMBER 29.—**Hetton.**—STREET WORKS.—The U.D.C. invite tenders for levelling and making up the following streets, viz.: Houghton-road (north end), South Market-street, and Blindly-lane. Specifications of Mr. John Harding, Council Offices, Hetton-le-Hole.

SEPTEMBER 29.—**York.**—ROADS.—The Corporation invite tenders for the completion of a new road, 50 feet in width, with all necessary excavating, filling, draining, kerbing, channelling, &c. Quantities of Mr. F. W. Spurr, City Engineer, Guildhall, York. Deposit £2 2s.

SEPTEMBER 30.—**Huddersfield.**—The Corporation invite tenders for the widening of Vicarage-road, Longwood, on the north-east side, together with the pulling down and re-erection of urinal and contingent works. Quantities of Mr. K. F. Campbell, Borough Engineer, 1, Peel-street, Huddersfield.

SEPTEMBER 30.—**Hull.**—PAVING.—The Corporation invite tenders for granite set paving and other works in Harcourt-street. Forms of tender at the City Engineer's Office, Guildhall, Hull.

SEPTEMBER 30.—**Purley.**—STREET WORKS.—The Coulsdon and Purley Urban District Council invite tenders for the making up of Peaks-hill Rise, Purley. Specificat on of Mr. E. J. Gowen, clerk, Council Offices, Purley. Deposit £2.

OCTOBER 1.—**Kirkdy in Ashfield.**—WATERWORKS.—The U.D.C. invite tenders for supplying and laying of about 2,850 yd. of 9 in. cast iron pipes, &c., as duplicate pumping main. Quantities of the Engineers, Messrs. Elliott & Brown, A.M.Inst.C.E., Burton Buildings, Parliament-street, Nottingham. Deposit, £2 2s.

OCTOBER 1.—**Ruislip-Northwood.**—The Ruislip-Northwood U.D.C. invite tenders for the construction and finishing of roads, and the sewers and manholes in connection with the Council's Housing Scheme at Ruislip.

OCTOBER 6.—**Blaenavon.**—LAYING OUT RECREATION GROUND, &C.—The Trustees of the Blaenavon Working Men's Institute and Hall invite tenders for the construction and laying out of a recreation ground and park. Quantities of Mr. S. Foster Deacon, 50, Cwmavon-road, Blaenavon. Deposit £5 5s.

OCTOBER 8.—**Prestwich.**—SEWER.—The Prestwich District Council invite tenders for the work and materials required in the construction of: (*a*) A concrete tube sewer, 30 in., 33 in. and 48 in. in diameter, from the Sewage Disposal Works to Rectory-lane; (*b*) a concrete tube sewer, 24 in. in diameter, in Bury New-road and Fairfax-road. Quantities of Mr. S. H. Morgan, A.M.Inst.C.E., Bent Hill, Prestwich. Deposit £2 2s.

OCTOBER 8.—**Rhymney.**—SEWER.—The Rhymney Valley Sewerage Board invite tenders for the construction of 9 miles of trunk sewer, from 30 in. to 42 in. diameter, &c. Quantities of Messrs. Willcox & Raikes, Union Chambers, 63, Temple Row, Birmingham. Deposit, £20.

OCTOBER 15.—**Llantrisant.**—SEWERAGE WORKS.—The Llantrisant and Llantwit R.D.C. invite tenders for the Pontyclun sewerage scheme, consisting of the laying of sewers, construction of a ferro-concrete bridge over the River Ely, construction of ferro-concrete tanks, erection of pumping station, &c. Quantities of Messrs. Thomas & Morgan & Partners, Pontypridd. Deposit, £5.

OCTOBER 21.—**Stowmarket.**—WATER SUPPLY.—The East Stow R.D.C. invite tenders for the construction of water works. Quantities of Messrs. John Taylor & Sons, Civil Engineers, 36, Victoria-street, Westminster, S.W. 1.

NO DATE.—**Blackwell.**—The R.D.C.. invite tenders for works of surface drainage at Pinxton Particulars of Mr. H. Silcock, Surveyor, 67, West-gate Mansfield.

NO DATE.—**Elland.**—ROADS, &C.—The U.D.C. invite tenders for excavations, kerbing, sewering, road and footpath making in connection with the laying out of 5 acres of land at Elland for housing purposes. Quantities of Messrs. Carby Hall & Dawson, Architects, Prudential Buildings, Park Row, Leeds.

NO DATE.—**Tamworth.**—ROAD AND SEWER.—The R.D.C. invite tenders for the construction of a street, and laying gas, water and sewer mains on the Kettlebrook site. Quantities of Messrs. Newton & Cheatle, 39, Newhall-street, Birmingham.

Auction Sales, Tenders, &c.

SEPTEMBER 30.—**Liphook (Hants).**—Messrs. Joseph Hibbard & Sons will sell at the Saw Mills, Longmoor Camp, stock of English soft and hard woods.

OCTOBER 1.—**Hants.**—Messrs. Joseph Hibbard & Sons will sell by order of the Board of Trade, at Longmoor Camp, near Liphook, Hants, stock of English soft and hard woods; large variety.

✱OCTOBER 8.—**Deptford Market.**—Messrs. Green & Son will sell by direction of the Disposal Board, at "L" Store, War Office Supply Depot, Deptford, Cattle Market, building material.

OCTOBER 8.—**Fittleworth, Sussex.**—A brick and tile works is included in Messrs. May & Rowden's auction at Wisborough Green.

✱OCTOBER 9.—**Hastings.**—Messrs. Dyer & Galloway will sell, by direction of the Disposal Board Ministry of Munitions, surplus material at East Sussex Saw Mills, Devonshire-road, Hastings.

✱OCTOBER 10.—**London.**—Messrs. Daniel Watney & Sons will sell at Winchester House, Old Broad-street, E.C., freehold property known as Commercial Schools, Nos. 563 & 565, Wandsworth-road, Clapham.

OCTOBER 21 and 22.—**Lyndhurst (Hants).**—Messrs. Joseph Hibbard & Sons will sell by auction at the Depot adjoining Lyndhurst road Station (L. & S.W. Rly.). Stock of English soft and hardwoods.

NO DATE.—**Elmswell.**—Sales by tender by order of the Disposal Board (Ministry of Munitions). Elmsworth Aerodrome, Suffolk, for disposal as a whole, or the building and land on which they stand, without the aerodrome itself. The buildings are of corrugated asbestic sheeting, brick, corrugated iron and timber. There is a water supply, and electric light plant, permanent roads, &c.

NO DATE.—**Purfleet.**—Sale by tender by direction of the Disposal Board, Ministry of Munitions, screens, sieves, and ladders, at Transportation Stores, Purfleet, Essex.

NO DATE.—**Redcar.**—Sale by Tender, by Order of the Disposal Board, Ministry of Munitions. Redcar Aerodrome, Yorks, for disposal as a whole or the buildings and land on which they stand, without the Aerodrome itself.

NO DATE.—**Salford.**—The Borough of Salford Gas Department invite tenders for the purchase and removal of brickmaking machinery.

NO DATE.—**Tangmere and Ford.**—Sales by tender by Order of the Disposal Board, Ministry of Munitions. Tangmere Aerodrome for disposal as an aerodrome. Area 198¼ acres. Ford (Littlehampton) Aerodrome, Sussex, for disposal as an aerodrome. Area 167 acres.

Competitions.

OCTOBER 31.—**Portishead.**—The Portishead Council Housing Committee invite designs for a lay-out and plan of a typical block of 2 houses. Premiums £50, £30 and £20.

NO DATE.—**Worcester.**—Designs are invited for a War Memorial. Particulars from the Chairman, County War Memorial, Shirehall, Worcester.

(*For further list of Competitions Open, see page 331.*)

Public Appointments.

SEPTEMBER 27.—**London.**—The L.C.C. invite application for the positions of instructors in handicraft woodwork).

SEPTEMBER 27.—**Walsall.**—The Walsall Corporation require the services of a general foreman to take charge of the erection of houses in connection with their housing and land settlement schemes.

SEPTEMBER 29.—**Ruislip-Northwood.**—The Ruislip Northwood U.D.C. invite applications for the appointment of Clerk of Works under their Housing Scheme. **Salary £6 per week.**

SEPTEMBER.—**Leicester.**—The Director of Education of the City of Leicester invites applications for the appointment of a full-time Instructor in Plumbing and the Allied Building Trade subjects. **Salary £350 per annum.**

OCTOBER 6.—**Carlisle.**—The Cumberland County Council invite applications for the appointment of chief assistant to the county architect. Salary £300.

✱OCTOBER 1.—**Belfast.**—The Library and Technical Instruction Committee invite applications for the position of Head of the Building Trade Department at the Municipal Technical Institute, Belfast. Salary, £300 per annum with War Bonus of £120 per annum.

✱OCTOBER 1.—**Crewe.**—The Crewe Council invite applications for the appointment of Clerk of Works under their Housing Scheme. Salary, £5 per week.

✱OCTOBER 4.—**Stafford.**—The Staffordshire Education Committee invite applications for the appointment of two architectura assistants. Salary, £200 per annum.

✱OCTOBER 6.—**Doncaster.**—Borough of Doncaster. Applications are invited from qualified persons for the following positions:—Housing and Town Planning Assistant; salary £215 rising to £285 per annum. Architectural Assistant; commencing salary £200 per annum. Engineering Assistant; commencing salary £200 per annum.

✱OCTOBER 6.—**Oswestry.**—The Owestry Borough Council invite applications for the appointment of an architect for the Housing Scheme.

✱OCTOBER 6.—**Surrey.**—The Coulsdon and Purley Urban District Council invite applications for the post of Quantity Surveying Assistant. Applicants must be fully qualified Quantity Surveyors, and be willing to assist in other work connected with housing in the Architect's Department. Salary £300 per annum.

✱OCTOBER 8.—**London, W.**—London County Council. There is a vacancy for an Instructor in Handicraft at the Kensal House School for Tuberculous Children, 553, Harrow-road, W. Salary £190, rising by annual ncrements of £10, to a maximum of £290.

✱NO DATE.—**Basford (Nottingham).**—The Basford R.D.C. require the services of an architectural draughtsman. Salary £150.

✱NO DATE.—**Gold Coast.**—European Draughtsman required for the Public Works Department by the Government of the Gold Coast for two tours of 12 months service, with possible permanency. Salary £300—£10—£350, and a War Bonus of £120 a year, which will be continued until six months after the restoration of peace, and will then be reconsidered.

NO DATE.—**Nuneaton.**—The Borough Engineer, Nuneaton, requires a junior architectural draughtsman. Salary £3 per week.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue several prices have been revised.—Ed.]

BRICKS, &c.

	£ s. d.
Per 1,000 Alongside, in River Thames up to London Bridge.	
Best Stocks	3 16 6
Per 1000, Delivered at London Goods Stations.	
Flettons	2 15 6
Best Stourbridge Fire bricks	10 10 0
GLAZED BRICKS—	
Best White, Ivory, and Salt Glazed Stretchers	21 10 0
Headers	21 0 0
Quoins, Bullnose and 4½in. Flats	26 10 0
Best Blue Pressed Staffordshire	9 3 6
Do. Bullnose	9 8 6
Blue Wire Cuts	7 13 6
D'ble Str'tch'rs	28 10 0
D'ble Headers	25 10 0
One Side and two Ends	29 10 0
Two Sides and one End	30 10 0
Splays and Squints	28 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.	
Thames Ballast	15 6	per yard, delivered
Pit Sand	18 6	
Thames Sand	20 0	2 miles
Best Washed Sand	19 0	radius
½ in. Shingle for Ferro-Concrete	18 0	Paddington.
¼ in.	19 0	

Per ton, delivered in London area.

	£ s. d.	£ s. d.
Best Portland Cement	3 13 6	3 16 6

66/6 alongside at Vauxhall in 80-ton lots.

Ferrocrete per ton extra on above. 5 0

Best Ground Blue Lias Lime 2 10 0 at rly. depot.

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 6d. each and credited at 2s. each if returned in good condition within three months.

Grey Stone Lime ..... 55s. 0d. per ton delivered.

Stourbridge Fireclay in s'cks 42s. 6d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R.. per ft. cube	2 0
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R.. per ft. cube	2 1½
Do. do. delivered on road waggons at Nine Elms Depot	2 2½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L.&S.W.R., South Lambeth Station, G.W.R., and Mileage Station G.W.R., per ft. cube	3 6½
Do. do. delivered on road waggons at above stations, per ft. cube	3 7½

White basebed, 3d. per ft. cube extra.

NOTE.—½d. ft. cube extra for every foot over 20 ft. *average.*

RANDOM BLOCKS—Per Ft. Cube, delivered at Rly. Dpot.	s. d.		s. d.
Ancaster in blocks	3 2	Closeburn Red Freestone	3 4
Beer in blocks	1 11	Red & White Mansfield random block	5 2
Grinshill in blocks	2 9	Yellow Magnesian Limestone do. do	4 2
Darley Dale in blocks	3 2		

YORK STONE, BLUE—*Robin Hood Quality.* Delivered at any Goods Station London.	s. d.
Scappled random blocks ..... Per Ft. Cube	7 0
6 in. sawn two sides landings to sizes (under 30 ft. super.) ..... Per Ft. Super	5 6
6 in. rubbed two sides, ditto ..... "	6 2
3 in. sawn two sides slabs (random sizes) "	2 5
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	1 5½
1½ in. to 2 in. ditto, ditto ..... "	1 3

HARD YORK— Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	6 0
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	5 0
6 in. rubbed two sides ditto ..... "	6 0
4 in. sawn two sides slabs (random sizes) "	2 10½
3 in. ditto, ditto "	2 2
2 in. self-faced random flags .. Per Yard Super	6 10

WOOD.

(The following prices are the Controller's prices fixed Feb. 7, 1919. The control is now removed.)

Pursuant to paragraph 3 of the Timber Control Order, 1918, the Controller of Timber Supplies hereby gives notice that until further notice the following shall be the maximum prices at which imported timber may be sold. These prices are per standard landed and in store.

WHITE SEA REDWOOD.

Inches	1st £ s.	2nd £ s.	3rd and unsorted £ s.	4th £ s.
4 × 11	54 10	52 10	49 10	47 10
4 × 9	50 10	48 10	45 10	43 10
4 × 8	47 10	45 10	42 10	40 10
4 × 7	47 10	45 10	42 10	40 10
3 × 8	46 10	44 10	41 10	39 10
3 × 7	46 0	44 0	41 0	39 0
3 × 6	45 10	43 10	40 10	38 10
3 × 5	45 10	43 10	39 10	37 10
2½ to 3 × 11	53 10	51 10	48 10	46 10
2½ to 3 × 9	48 0	46 0	43 0	41 0
2½ × 7 to 8	46 0	44 0	41 0	39 0
2½ × 6	45 10	43 10	40 10	38 10
2½ × 5	45 10	43 10	39 10	37 10
2 × 11	53 10	51 10	48 10	46 10
2 × 9	48 0	46 0	43 0	41 0
2 × 8	46 10	44 10	41 10	39 10
2 × 7	46 0	44 0	41 0	39 0
2 × 6	45 10	43 10	40 10	38 10
2 × 5	44 10	42 10	39 10	37 10
2 × 4	44 10	42 10	40 0	38 0

UNSORTED LARCHWOOD at 3rd Archangel Redwood Prices.

Boards, 1st and 2nd, £1 10s. extra.
Boards, 3rd and 4th, £1 extra.

WOOD (*Continued*).

FEATHER EDGED BOARDS, £40 10s. per std.

SAWN LATHS, 3s. per bundle.

U/S SLATING BATTENS (yellow and white and strips), £35.

SWEDISH AND NORWEGIAN FLOORING AND MATCHING.

U/S Red and White.

Per 100ft. super.	Per 100 ft. super
1¼in. P.E. at 60/-	¾in. P.E. at 30/-
1½in. P.E. at 50/-	¾in. P.E. at 25/6
1in. P.E. at 40/-	½in. P.E. at 20/6
¾in. P.E. at 35/-	

T. & G. and Match Lining at 6d. per square extra.

PLANED BOARDS—11 in., £45 per standard; 10 in., £43 per standard; 9 in., £43 per standard; 8 in., £41 per standard.

YELLOW PINE.

Inches	1st £ s.	2nd £ s.	3rd £ s.	4th £ s.
3 × 12 and up	67 0	55 0	50 10	44 0
3 × 11	64 0	53 0	48 10	44 0
3 × 10	58 0	48 0	44 0	42 0
3 × 9	57 0	47 0	43 0	41 0
3 × 8	55 0	45 0	42 0	39 0
3 × 7	55 0	45 0	42 0	39 0
3 × 6 and down	52 0	42 0	40 0	37 0

For complete specification and controlled prices, see "London Gazette," February 7, 1919.

Dry Wainscot Oak, per ft. super, as inch	0 2 6	to	0 3 0
¾ in. do. do.	0 2 0	to	0 2 6
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0 2 6	to	0 3 0
Cuba. Mahogany	0 3 6	to	0 4 0
Teak (Rangoon, Moulmein or Java), per load	60 0 0	to	85 0 0
American Whitewood planks, per ft. cube	0 18 0	to	1 0 0
Scotch Glue, per cwt.	5 5 0	..	—
Liquid Glue, per gallon	0 17 0	..	—

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	48 10 0
" " "	22 by 12	35 0 0
First quality " "	22 by 11	32 5 0
" "	20 by 12	32 0 0
Best Blue Portmadoc	20 by 10	27 10 0
" "	18 by 10	22 0 0
First quality "	18 by 9	18 0 0
" "	16 by 10	17 0 0
" "	16 by 8	13 5 0

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	6 2 6
Ditto hand-made ditto	6 7 6
Ornamental ditto	6 10 0
Hip and valley tiles (per dozen)	0 14 0

METALS.

WROUGHT-IRON TUBES AND FITTINGS—(Discount off List for lot of not less than £10 net value delivered direct from works. 5 per cent. less carriage forward if sent from London stocks.)

	Sizes up to and including 2 in. Tubes.	Fittings.	Sizes 2½ in. to 6 in. Tubes.	Fittings.
Gas	26½	32½	31½	37½
Water	18¾	28¾	26½	35
Steam	11¾	25	21½	32½
Galvanised Gas	7½	25	12½	30
" Water	+ 2½	—21½	—50	—27½
" Steam	+ 12½	—17½	+2½	—25

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6 fts.	4 7	3 4	4 0
2½ in. "	5 6	3 8	5 0
3 in. "	6 9	4 0	6 0
3½ in. "	7 6	5 0	7 0
4 in. "	7 11	5 8	8 0

RAIN-WATER PIPES, &c.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6fts. plain	3 4	1 10	2 6
2½ in. " "	3 9	2 2	3 0
3 in. " "	4 5	2 8	4 0
3½ in. " "	5 4	3 2	4 8
4 in. " "	5 7½	3 10	5 8

L.C.C. DRAIN PIPES,—9 ft. lengths. London Prices. 4 in., 8s. 4d. .. 5 in.. 9s 7d. .. 6 in.. 11s. 9d.

	Per ton in London. £ s. d.		£ s. d.
IRON—			
Common Bars	26 10 0	to	27 10 0
Staffordshire Crown Bars—good merchant quality	27 0 0	..	27 10 0
Staffordshire "Marked Bars"	28 0 0	..	29 0 0
Mild Steel Bars	23 10 0	..	24 10 0
Steel Bars, Ferro-Concrete quality, basis price	23 0 0	..	24 0 0
Hoop Iron, basis price	29 0 0	..	30 0 0
" " Galvanised	40 0 0	..	—
Sheet Iron Black—			
Ordinary sizes to 20 g.	26 10 0	..	27 10 0
" " 24 g.	27 10 0	..	28 10 0
" " 26 g.	29 0 0	..	30 0 0
Sheet iron, Galvanised flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	34 0 0	.. —	Nominal prices.
Ordinary sizes to 22 g. and 24 g.	34 0 0	.. 34 10 0	Nominal prices.
Ordinary sizes to 26 g.	36 0 0	.. 36 10 0	Nominal prices.

METALS (*Continued*).

	Per ton in London £ s. d.		£ s. d.
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	35 10 0	..	Nominal prices.
" " 22 g. and 24 g.	36 0 0	..	Nominal prices.
Ordinary sizes to 26 g.	39 0 0	..	Nominal prices.
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	33 0 0	..	Nominal prices only.
Ordinary sizes, 22 g. and 24 g.	33 10 0	..	Nominal prices only.
Ordinary sizes, 26 g.	32 10 0	..	Nominal prices only.
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	28 0 0	..	—
Best Soft Steel Sheets, 20 g. and 24 g.	28 10 0	..	—
Best Soft Steel Sheets, 26 g.	30 0 0	..	—
Cut Nails, 3 in. to 6 in.	31 0 0	..	32 0 0

(Under 3 in. usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.		
LEAD—Sheet, English, 4 lb. and up	37 0 0	..	—
Pipe in coils	37 10 0	..	—
Soil Pipe	40 0 0	..	—
Compo pipe	42 10 0	..	—

NOTE—Country delivery, 20s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	23 10 0	..	—
Do., ex country, carriage forward ..... per ton	24 10 0	..	—
COPPER—			
Strong Sheet .... per lb.	0 2 3	..	—
Thin " .... "	0 2 4	..	—
Copper nails .... "	0 2 3	..	—
Copper wire .... "	0 2 4	..	—
TIN—English Ingots "	0 2 10	..	—
SOLDER—Plumbers' "	0 1 3	..	—
Tinmen's "	0 1 5	..	—
Blowpipe "	0 1 8	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

Per Ft.		Per Ft.	
15 oz. fourths	7½d.	32 oz. fourths	10½d.
" thirds	8d.	" thirds	11½d.
21 " fourths	8½d.	Fluted, Obscured and Enamelled Sheet.	
" thirds	8¾ d.	15 oz.	7½d.
26 " fourths	9½d.	21 "	8½d.
" thirds	10½d.		

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
¼ Rolled plate	5½d.
⅜ Rough rolled and rough cast plate	6d.
½ Rough rolled and rough cast plate	6½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	7½d.
Rolled Sheet	6d.
White Rolled Cathedral	6d.
Tinted do.	6½d.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil	in pipes ..... per gallon	0 8 9
" " "	in barrels .... "	0 8 0
" " "	in drums .... "	0 9 2
Boiled "	in barrels .... "	0 9 6
" " "	in drums .... "	0 9 8
Turpentine	in barrels ..... "	0 11 5
"	in drums (10 gall.) .. "	0 11 11
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		75 0 0
GENUINE WHITE LEAD PAINT— "Blackfriars," "Nine Elms," "Park," and other best brands (in 14 lb. tins) not less than 5 cwt. lots.. per ton delivered		95 10 0
Red Lead, Dry (packages extra) ..	per ton	46 10 0
Best Linseed Oil Putty	per cwt.	1 11 3
Filocol	per cwt.	0 16 6
Size. X D Quality	fkn.	0 6 0

VARNISHES, &c.

	Per gallon. £ s. d.
Oak Varnish ..... Outside	0 17 0
Fine ditto ..... ditto	0 19 0
Fine Copal ..... ditto	0 20 6
Pale Copal ..... ditto	0 21 6
Pale Copal Carriage ..... ditto	0 23 6
Best ditto ..... ditto	0 33 6
Floor Varnish ..... Inside	0 18 0
Fine Pale Paper ..... ditto	0 17 0
Fine Copal Cabinet ..... ditto	0 21 6
Fine Copal flatting ..... ditto	0 19 6
Hard drying Oak ..... ditto	0 17 0
Fine Hard drying Oak ..... ditto	0 18 0
Fine Copal Varnish ..... ditto	0 19 6
Pale ditto ..... ditto	0 21 6
Best ditto ..... ditto	0 33 6
Best Japan Gold Size	0 19 0
Best Black Japan	0 22 0
Oak and Mahogany Stain	0 21 0
Brunswick Black	0 14 0
Berlin Black	0 19 0
Knotting	0 31 0
French and Brush Polish	0 22 0
Liquid Dryers in Terebine	0 17 0

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him *not later than* 12 *noon on Wednesday*.

* Denotes *accepted* † Denotes *provisionally accepted*.

‡ Denotes *recommended for acceptance*.

§ Accepted subject to modifications.

METROPOLITAN ASYLUMS BOARD.—For (1) laying new gas! main at Joyce Green Hospital, near Dartford; (2) providing and fixing new washing machines at the Eastern Hospital. Mr. T. Cooper, M.I.C.E., Engineer-in-Chief:—

(1) *G. Percy Trentham, Ltd., Queen-street, E.C. 4	£664	9	
Mr. Charles Ball, Letchworth	695	0	
Mr. Whittaker Ellis, Westminster	776	0	
Cannon & Hefford, Peckham	855	0	
Mr. H. G. Caudle-Walker, Brixton	957	0	
Mr. J. W. Ellingham, Dartford	990	0	
(2) *Seaforth Engineering Co., Westminster	£275	0	
Summerscales, Ltd., Central Buildings, S.W. 1	313	10	
D. & J. Tullis, Ltd., Clydebank	322	0	
Thomas Bradford & Co., Holborn	368	0	

STOURBRIDGE.—For the erection of 131 houses and the construction of three new streets, together with sewers, manholes, &c., on the Heath Estate, South-road for the Borough Council. Mr. Frederick Woodward, Borough Surveyor and Architect. Quantities by Messrs. Sylvester Taylor & Bagnell, Queens College, Birmingham:—

§Mr. A. H. Guest, Stourbridge	£109,645	0	0	houses
	6,620	0	0	streets
Mr. S. E. Moss, Southend on-Sea	112,017	10	0	houses
	5,967	12	2	streets
Messrs. Bridgwater Bros., Cradley Heath	112,194	9	0	houses
Mr. J. Knox, Evesham	121,192	0	0	houses
Messrs. Parkinson & Sons, Ltd., Blackpool	122,143	0	0	houses
	10,350	0	0	streets
Messrs. H. Boot & Sons, Ltd., Westminster	127,961	0	0	houses
	11,472	0	0	streets
Messrs. Willetta & Sons, Old Hill, Staffs.	128,993	0	7	houses
	9,091	13	0	

EASTRY.—For the erection of six houses at Ash for the Eastry R.D.C.:—

Turner & Watts, Sandwich	£7,900
T. T. Dodds, Canterbury	6,918
G. H. Devine & Son, Deal	6,795

The tenders have been referred to the Ministry of Health.

SWANSEA.—For the painting of various schools for the Education Committee:—

*Hanney & Co., Birchgrove Council School	£225	0	0
*Wilson & Co., Brynhyfryd	294	10	0
*Pugsley & Son, Cadle	173	0	0
*Pugsley & Son, Cockett	132	0	0
*S. R. George, Cwm	185	10	0
*Wilson & Co., Cwmbwrla	97	5	0
*W. E. Isaac, Dunvant	154	14	6
*W. Davies & Co., Dyfatty	155	0	0
*Wilson & Co., Morriston Boys	98	10	0
*J. H. Symons, Peniel Green	189	12	0
*G. E. Pickett, Terrace-road	255	0	0
*Wilson & Co., Tirdenaw	124	0	0
*H. Billings & Sons, Vetch Field	198	12	6
*W. Davies & Co., Waun Wen	187	0	0

WATERFORD.—For the erection of eleven four-roomed cottages for the Corporation:—

‡J. A. Nolan	£6,320

PATENTS.

APPLICATIONS PUBLISHED.*

131,234.—E. C. R. Marks (Truscon Steel Co.): Metallic frameworks for window sashes.

131,242.—A. H. Carrier and E. W. Grove: Casement windows.

131,340.—J. S. White & Co. and T. C. Letcher: Spars, beams or girders.

131,433.—G. McAlpine: Boilers for kitchen ranges.

131,439.—R. Dixon: Portable lighting devices.

131,440.—H. P. H. Anderson: Lifting gear for pulley-blocks.

131,453.—Sir G. K. Scott-Moncrieff and J. Hines: Construction of concrete or cement roads.

131,504.—J. A. Hill: Fire-bars for furnaces.

131,541.—F. W. Brampton: Flushing cisterns.

* All these applications are now in the stage in which opposition to the grant of Patents upon them may be made.

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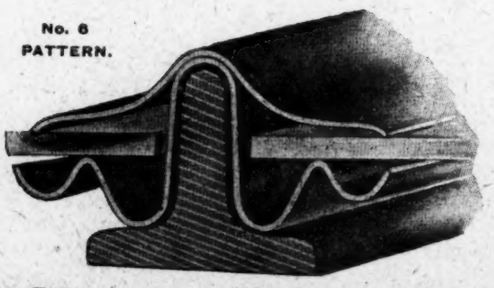

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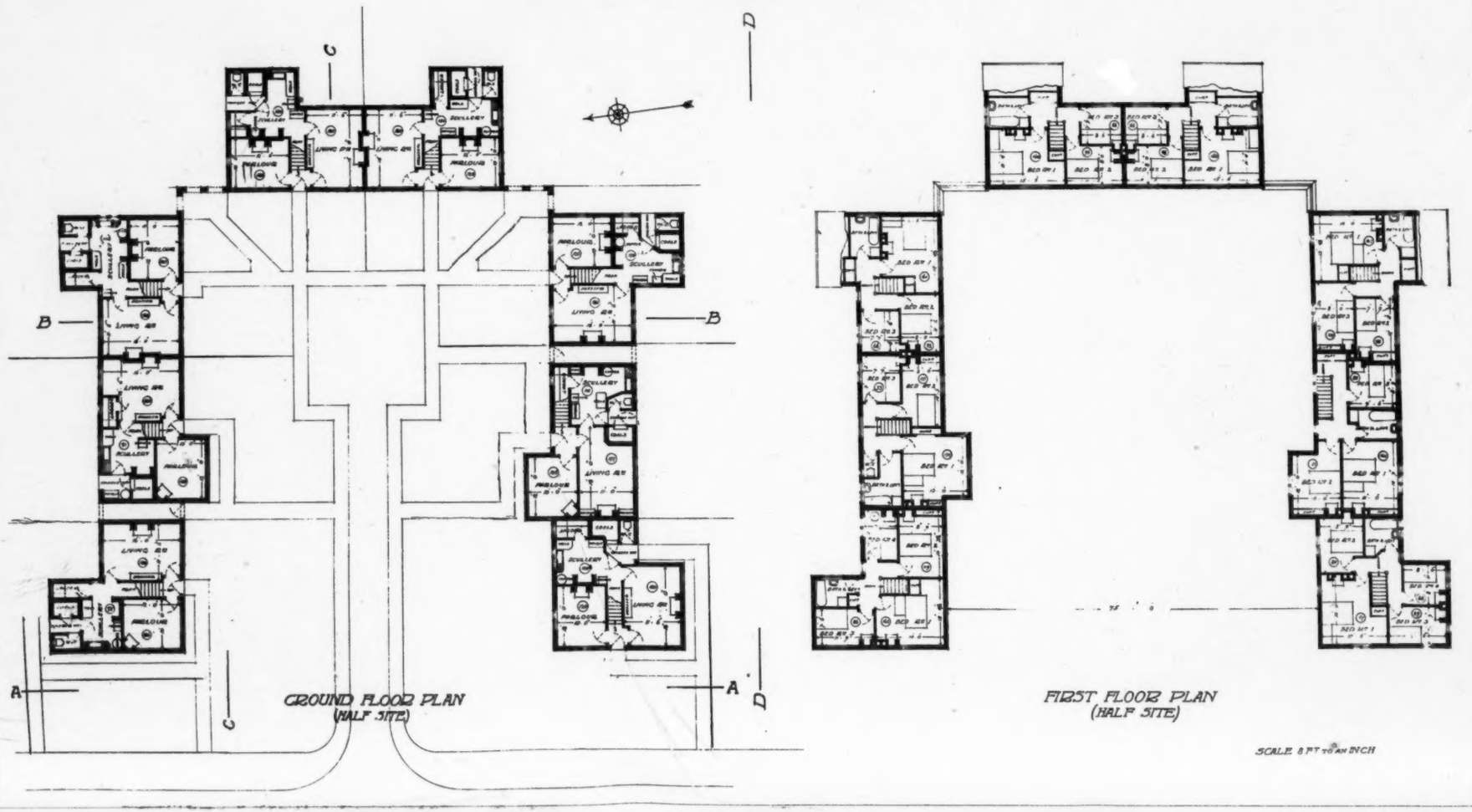
CITY OF BIRMINGHAM HOUSING COMPETITION

SELLY OAK ROAD SITE



FIRST PREMIATED DESIGN, BY MESSRS. INGALL, BRIDGWATER & PORTER.

PHOTO: THOS. LEWIS, LTD.

THE BUILDER, SEPTEMBER 26, 1919.

FIRST PREMIATED DESIGN, BY MESSRS. INGALL, BRIDGWATER & PORTER.

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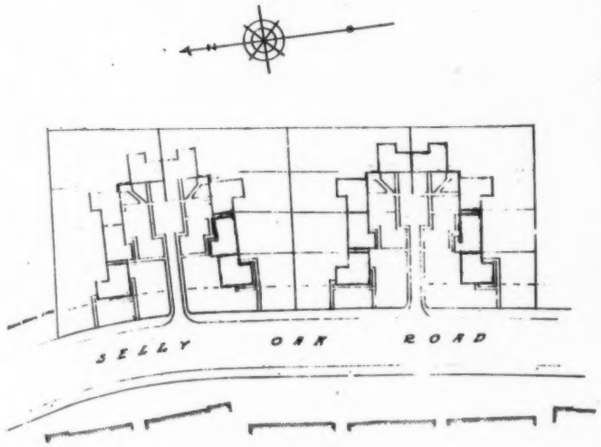
CITY OF BIRMINGHAM HOUSING COMPETITION

SELLY OAK ROAD SITE

ELEVATION ON LINE A·A

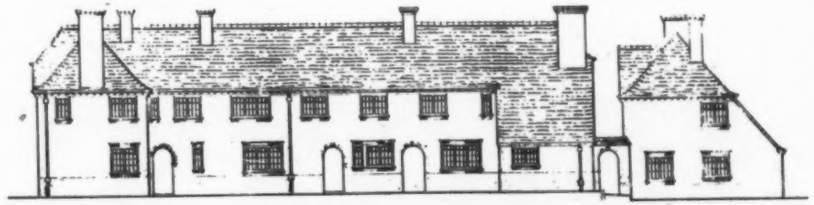
ELEVATION & SECTION ON LINE B·B



BLOCK PLAN

SCALE 16 FT TO AN INCH

ELEVATION & SECTION ON LINE C·C



ELEVATION ON LINE D·D

SCALE 8 FT TO AN INCH

THE BUILDER, SEPTEMBER 26, 1919.

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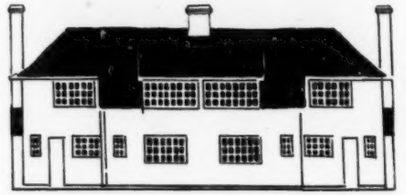
BIRMINGHAM HOUSING COMPETITION

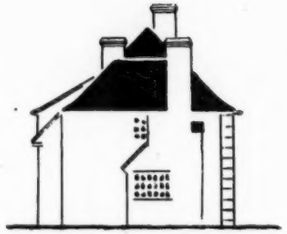
PAIR



BACK VIEW

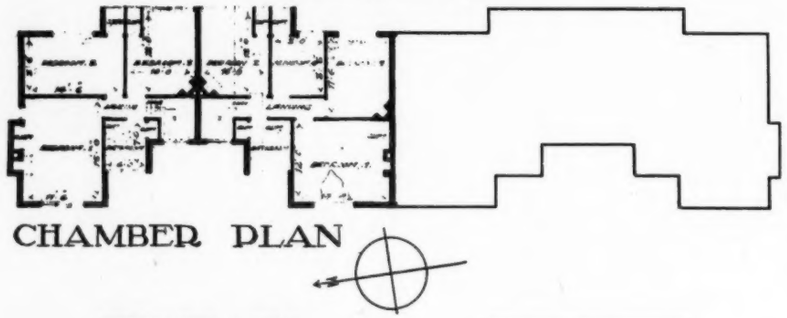
BLOCK

FRONT VIEW

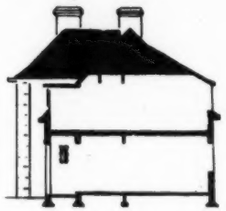


END VIEW

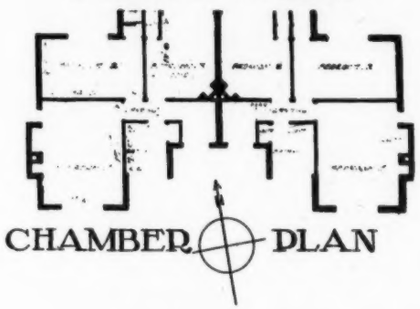
FRONT VIEW



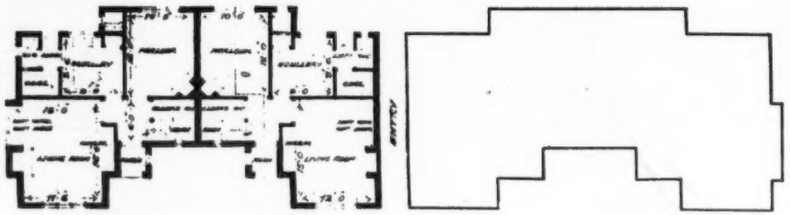
CHAMBER PLAN



SECTION

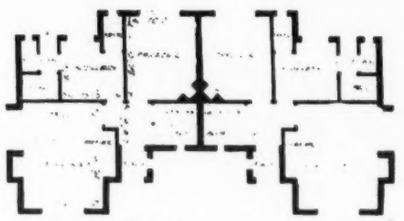


CHAMBER PLAN



GROUND PLAN

SCALE 8 FEET TO AN INCH



GROUND PLAN

PREMIATED DESIGN, BY MR. HAROLD S. SCOTT.

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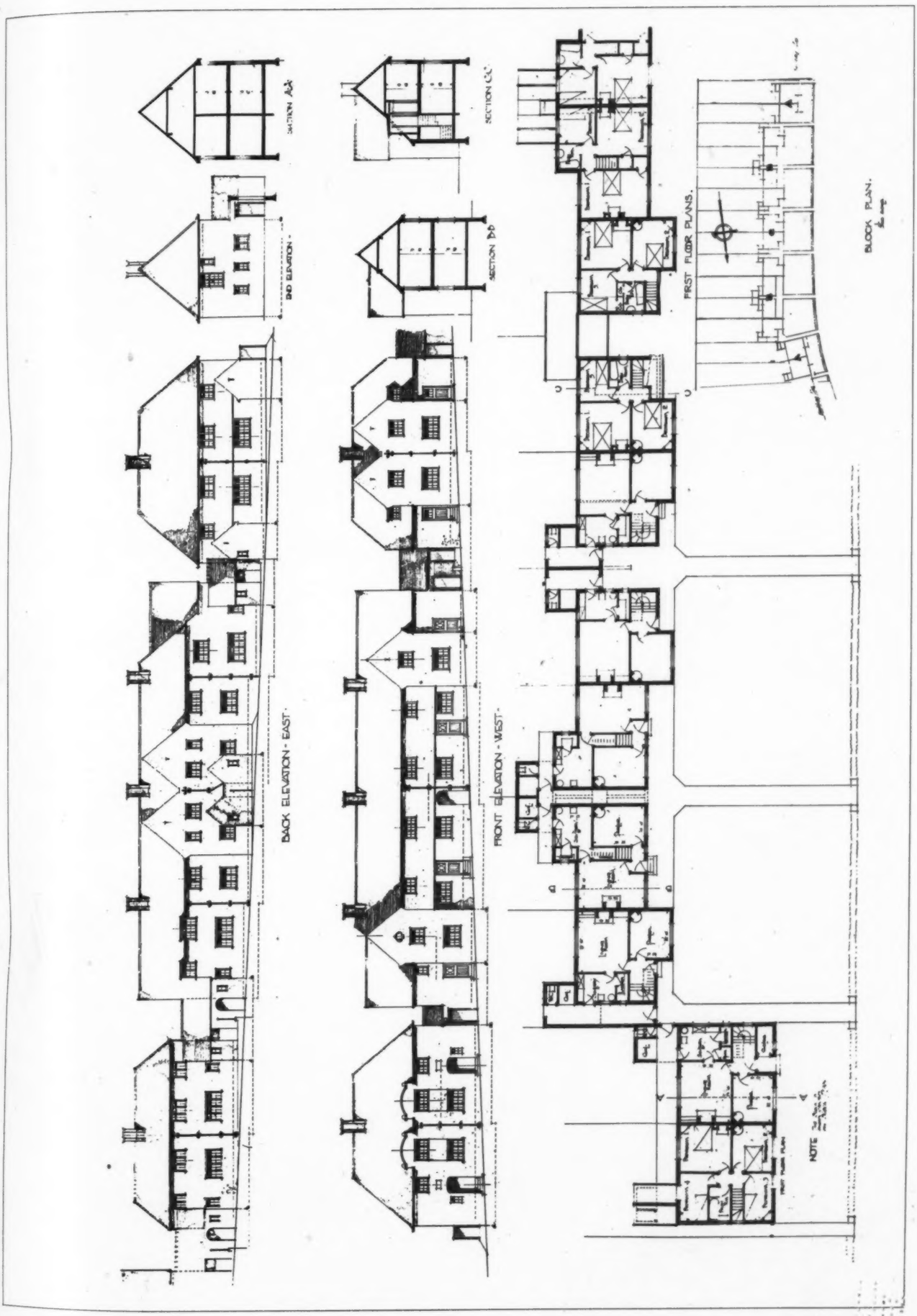

BIRMINGHAM HOUSING COMPETITION: PREMIATED DESIGN, BY MESSRS. CROUCH, BUTLER & SAVAGE.

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PREMIATED DESIGN, BY MR. HAROLD S. SCOTT.

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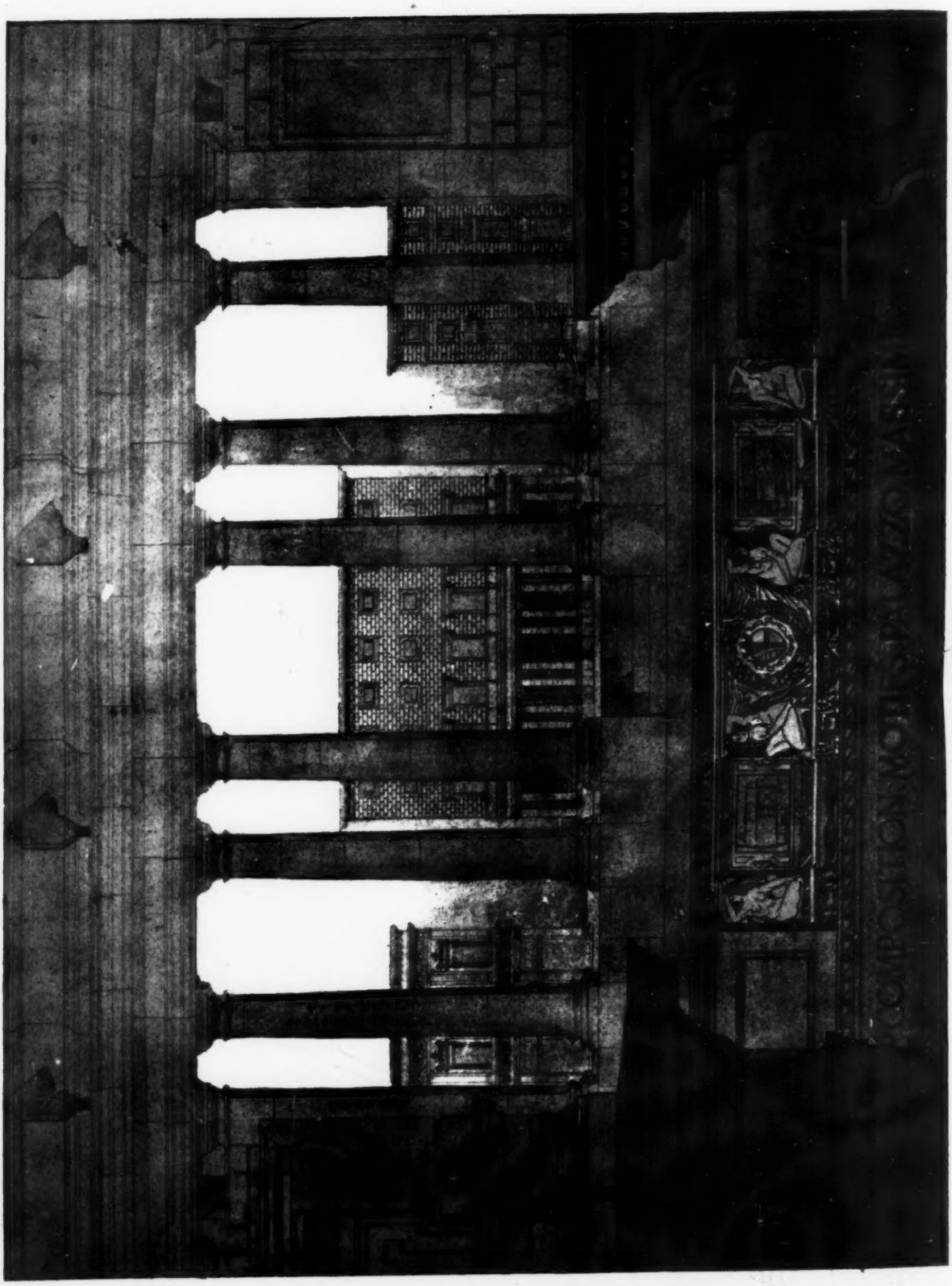

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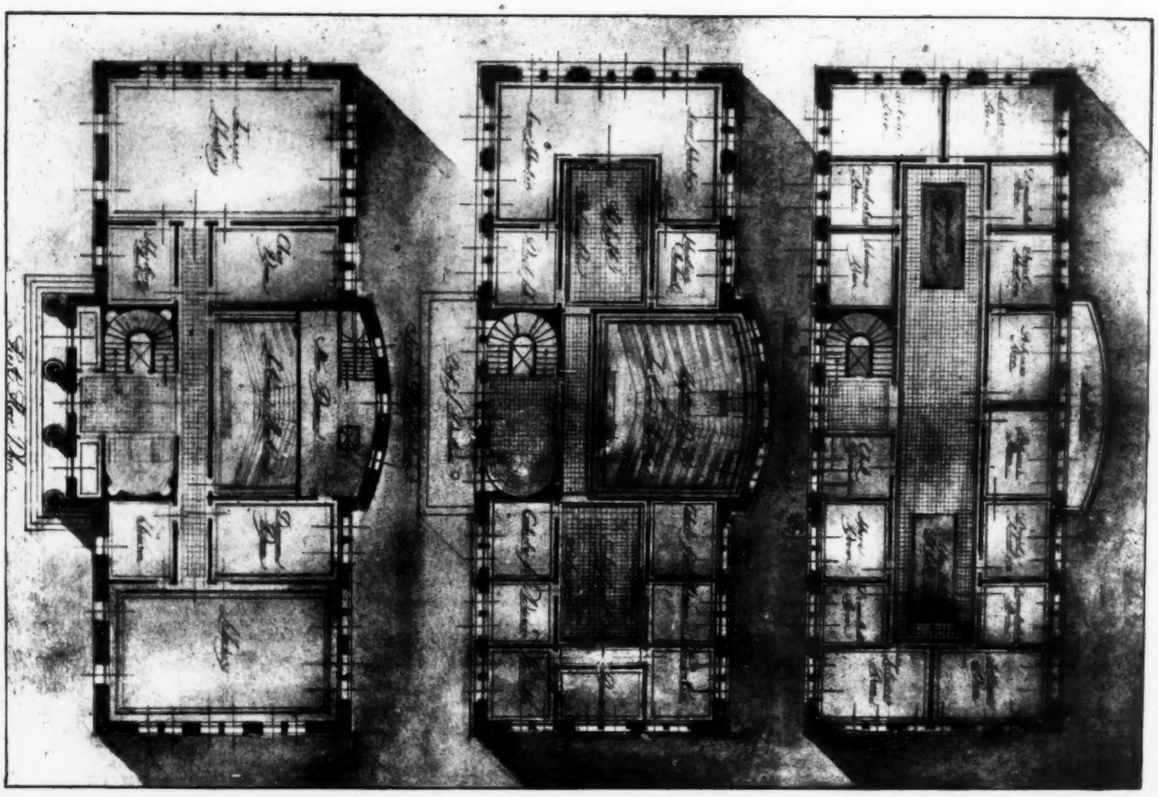

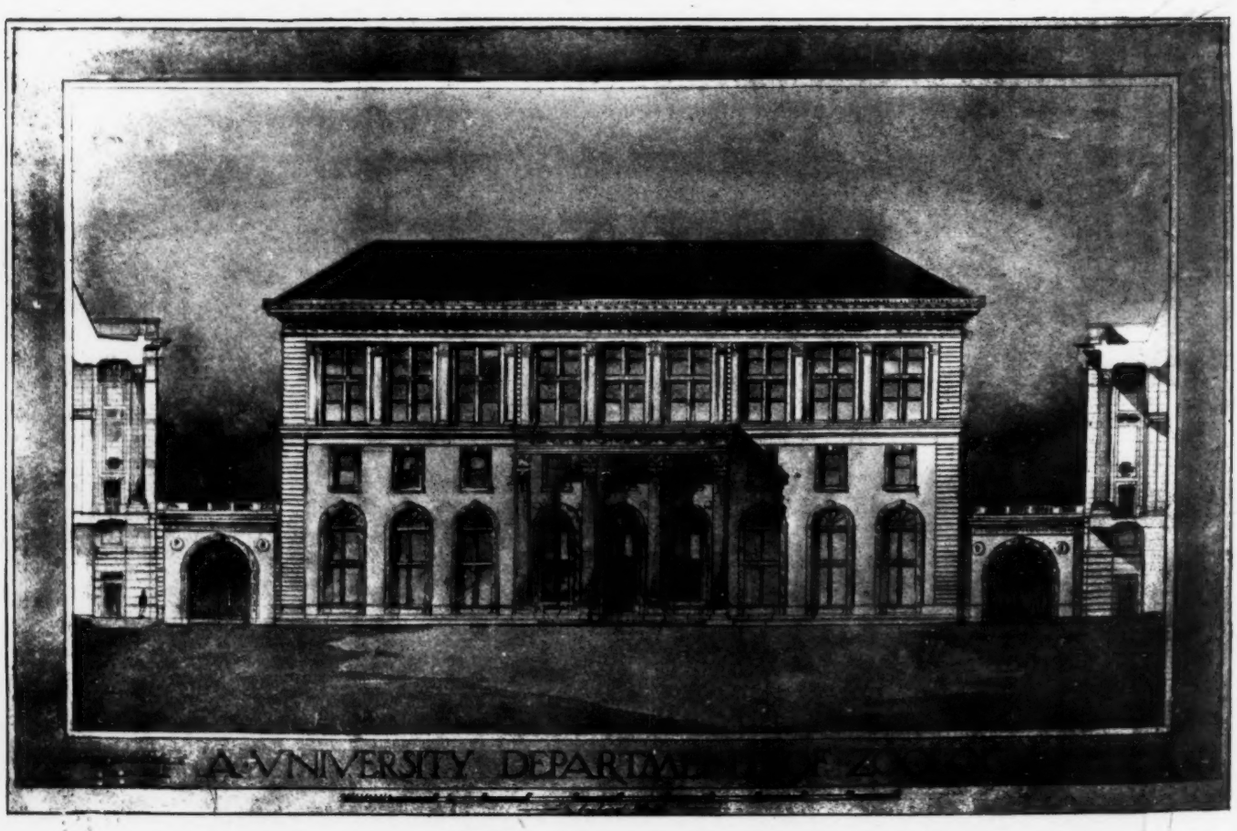

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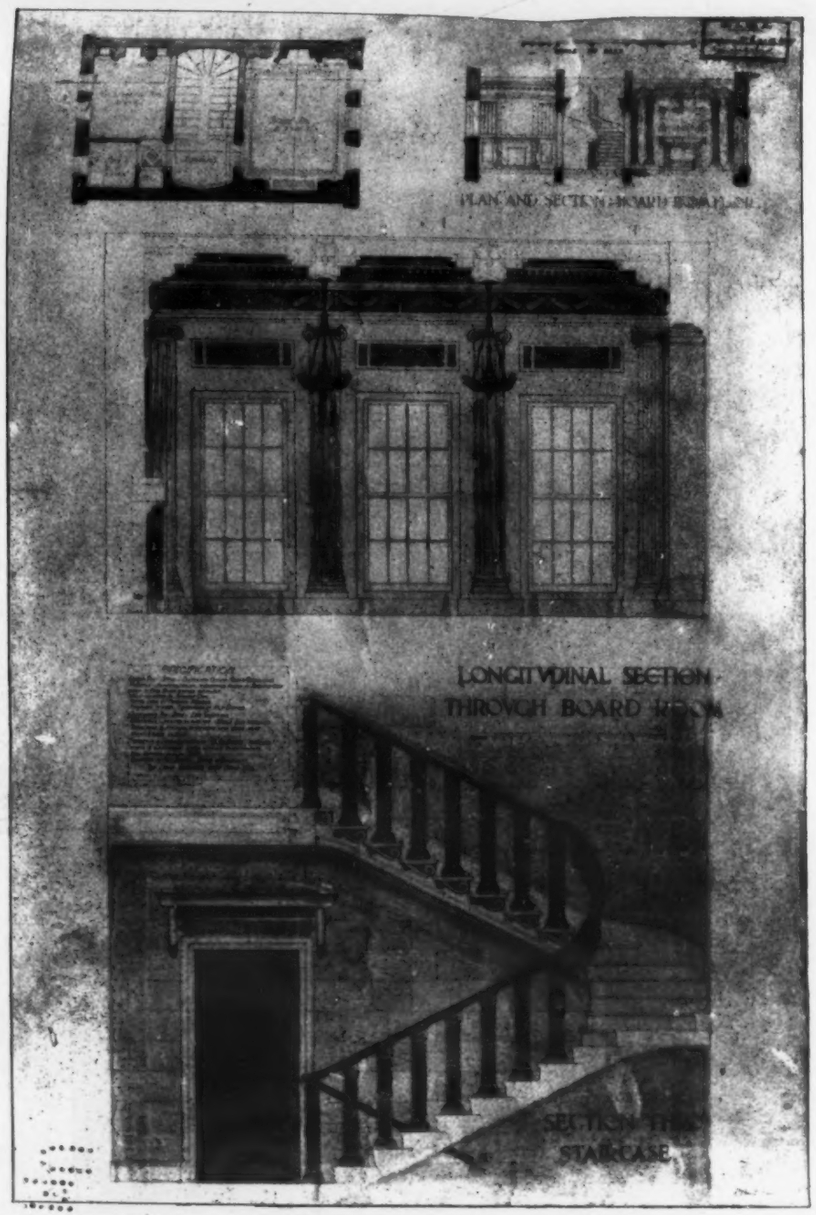

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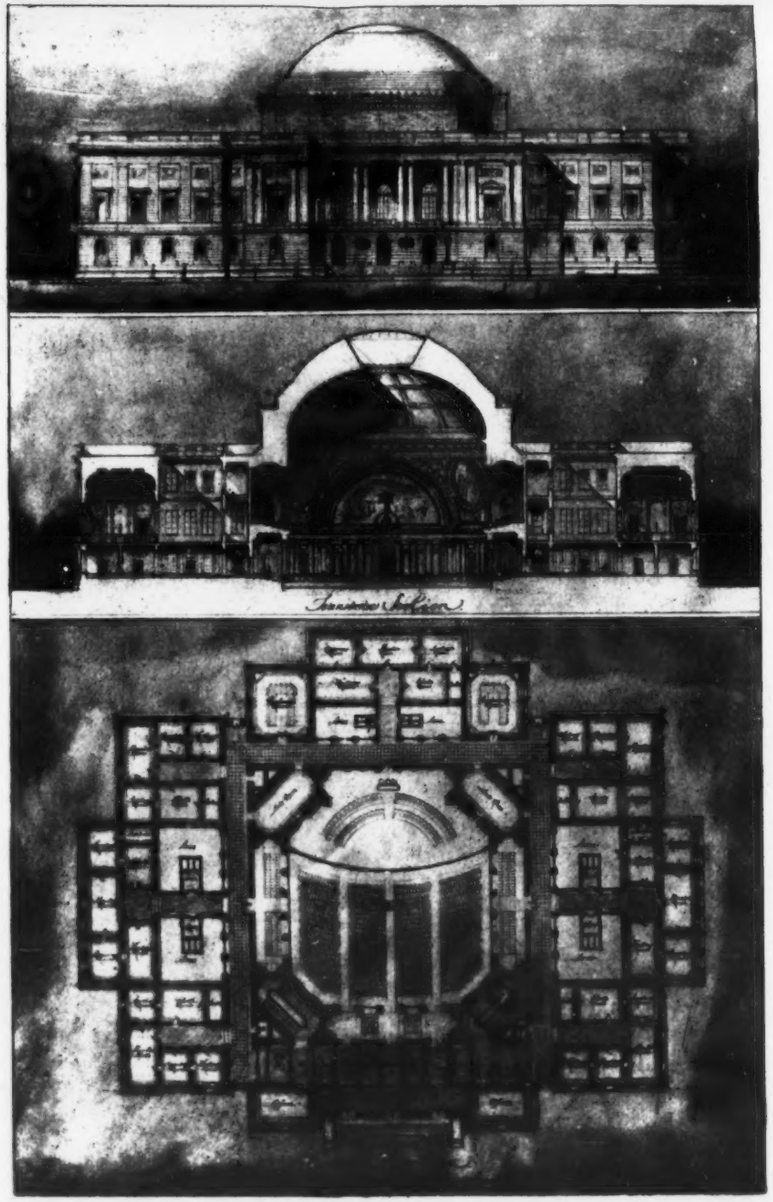

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